05084

The Status of Intramural Minority Scientists

as of October 1, 1992

Final Report of the Committee

February 1994

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Committee on the Status of Intramural Minority Scientists

Final Report

I. INTRODUCTION

The purpose of a research institution such as the National Institutes of Health (NIH) is to advance the understanding of human disease as rapidly as possible. To do so, NIH must take full advantage of the talents and insights of all potential participants in its research efforts. It is generally recognized that NIH should foster an environment that values intellectual achievement, innovation, integrity, generosity and openness in its intellectual endeavors, and a balanced competition for its resources. Above all, NIH should tirelessly nurture talent regardless of gender, race, creed, or the presence of physical disability.

Certain minority groups (Blacks, Hispanics, Native Americans) and women have been notably underrepresented on the faculties of medical research institutions in the United States, a problem that has been the subject of recent studies by the National Academy of Sciences, Association of American Medical Colleges, and other interested parties. Minority scientists are also underrepresented in the private sector.

Possible reasons for the underrepresentation of minorities in science (and engineering) at the national level include, but are not limited to, the following factors: (1) the small pool of minority doctoral graduates[1]*; (2) discriminatory hiring and promotion practices; and (3) failure of minority scientists to find an encouraging and supportive environment for career growth and retention in the highly competitive climate of modern biomedical science. The contribution of each of these factors to the underrepresentation of minorities on scientific faculties has not been clearly defined.

The recruitment, retention, and promotion of minority scientists at NIH has been the subject of recent attention in the intramural program. In the spring of 1990, an investigation into the Staff Fellowship Program (SFP) was initiated as the result of concerns about the disproportionately small number of Black tenured scientists in intramural NIH. The SFP includes intramural scientists in the following positions: "staff fellows, senior staff fellows, medical staff fellows—clinical associates and research associates, including those who have Commissioned Officer Corps appointments, and dental staff fellows—epidemiology staff fellows, and pharmacology fellows."[2]

The objective of the SFP review was "to determine if structural and attitudinal barriers exist to prevent the recruitment and retention of minorities, particularly Black scientists, in this intramural program."[3] The investigation was performed by an independent contractor through interviews with administrative personnel and service fellows, a review of the official personnel records of the service fellows, and comparisons of the formal NIH policies with the implemented practices and

*Notes begin on page 43.

program operations. In April 1992, the *Report to the National Institutes of Health on Recruitment, Selection, Promotion, Retention, and Conversion of the Staff Fellowship Program* was submitted to Ms. Diane Armstrong, Director, NIH Office of Equal Opportunity.

The review found the following attitudinal and structural barriers: (1) a lack of significant recruiting efforts by laboratory and branch chiefs and a significant number of laboratory chiefs who believed that minority recruiting is unnecessary or impossible; (2) a lack of utilization of the centralized Staff Fellow Applicant File prior to the NIH Office of Education (and therefore an increased need for an applicant to have personal contacts at NIH to obtain interviews); and (3) apparent lower compensation for minorities in the SFP program compared with the private sector and with nonminority service fellows.

The SFP report made extensive recommendations for rectifying the attitudinal and structural barriers confronting minorities that the review revealed. These recommendations were made with regard to enhancing recruitment of minorities and improving their chances of conversion to tenured positions. See **Appendix A** for the SFP report and recommendations.

Shortly after the completion of the report on the SFP, and in response to the growing awareness of minority underrepresentation among the ranks of tenured scientists at NIH and a perception that a more comprehensive study of the problem was needed, Dr. Bernadine Healy, then the Director of NIH, requested that Dr. Carl Kupfer, then the Acting Deputy Director for Intramural Research, establish a committee of intramural scientists to examine comprehensively the status of underrepresented minority scientists in the intramural research program at NIH.

A committee was convened representing both tenured and nontenured scientists under the chairmanship of Dr. Bruce A. Chabner, the Scientific Director of the Division of Cancer Treatment, National Cancer Institute. Members were chosen by Dr. Chabner from nominees proposed by individual Scientific Directors. In addition, Dr. Chabner asked that certain administrative professionals from the Office of Education, NIH, the Office of Equal Employment, NIH, and ICD EEO Officers join the committee. The final membership of the committee includes 12 members from the intramural scientific community, of whom seven are Black and three are Hispanic. Members are listed on pages 3–4.

The committee's report follows. A separate task force was convened concerning the status of women in intramural NIH, and its report was accepted by the Director, NIH, in June 1993.

Goals and Scope of the Study by the Committee on the Status of Intramural Minority Scientists

The charge to the Committee on the Status of Intramural Minority Scientists was specifically to document the numbers and percentages of underrepresented minorities among the ranks of tenured and nontenured scientists, to investigate the reasons for this underrepresentation, and to suggest

Committee on the Status of Intramural Minority Scientists

NAME	POSITION	STATUS
Dr. Bruce Chabner	Director, Division of Cancer Treatment, NCI	Tenured
Intramural Scientists:		
Dr. Philip Browning	Senior Clinical Investigator, Laboratory of Tumor Cell Biology, Division of Cancer Etiology, NCI	Nontenured
Dr. Jean Lud Cadet	Acting Chief, Molecular Neuropsychiatry Section, Addiction Research Center, NIDA	Nontenured
Dr. Gregory Campbell	Chief, Analytical Biometrics Section, Biometry and Field Studies Branch, NINDS	Tenured
Dr. Charles E. Egwuagu	Senior Research Scientist, Laboratory of Immunology, NEI	Nontenured
Dr. Michele K. Evans	Senior Clinical Investigator, Laboratory of Molecular Genetics, NIA	Nontenured
Dr. Silvia Fojo	Head, Section on Molecular Biology, Molecular Disease Branch, NHLBI	Tenured
Dr. Arlyn Garcia-Perez	Senior Investigator, Laboratory of Kidney and Electrolyte Metabolism, NHLBI	Tenured
Dr. Frank Gonzalez	Chief, Nucleic Acids Section, Laboratory of Molecular Carcinogenesis, Division of Cancer Etiology, NCI	Tenured
Dr. Ida S. Owens	Chief, Section on Genetic Disorders of Drug Metabolism, Human Genetics Branch, NICHD	Tenured

NAME	POSITION	STATUS
Dr. Eddie Reed	Chief, Medical Ovarian Cancer Section, Medicine Branch, Division of Cancer Treatment, NCI	Tenured
Dr. Griffin P. Rodgers	Chief, Molecular Hematology Unit, Laboratory of Chemical Biology, NIDDK	Tenured
Administrative Representatives:		
Dr. Michael Fordis	Director, Office of Education, Office of the Director, NIH	NA*
Dr. Ruthann Giusti	Special Assistant to the Director, Division of Cancer Treatment, NCI	NA
Ms. Cathleen Peters	Program Analyst, Division of Cancer Treatment, NCI	NA
NIH EEO Representatives:		
Ms. Diane Armstrong	Director, Office of Equal Opportunity, Office of the Director, NIH	NA
Ms. Jalil Mutakabbir	Black Employment Program Manager, Office of Equal Opportunity, Office of the Director, NIH	NA
Mr. Levon Parker	Minority and Special Concerns Program Officer, NINDS	NA
Ms. Mary Francis Spears	Chief, Office of Special Concerns, NHLBI	NA

* Not applicable

solutions to the problem. The committee was asked to examine the status of minorities not only in the SFP, but also in the ranks of other programs that train or employ nontenured scientists and among the ranks of tenured scientists.

II. METHODS

A. Study Population

This report analyzes the status of underrepresented minority scientists who held a position as a trainee or full-time employee in the NIH intramural program on October 1, 1992. Guest researchers, volunteers, and experts are not considered in this report. Employees or trainees are considered underrepresented minorities if they identified themselves as American Indian or Alaskan Native, Black (not of Hispanic origin), or Hispanic. The concept of underrepresentation is drawn from that proposed by the American Association of Medical Colleges (AAMC). Using a population parity model, AAMC has determined the representation of minority groups among the medical profession and compared that with minority group representation in the U.S. population as a whole. If the representation of the minority group among physicians is less than in the population as a whole, the group is considered underrepresented. By this criterion, AAMC lists Blacks, American Indians, Mexican Americans, and mainland Puerto Ricans as underrepresented in the medical professions. By a similar analysis extended to all persons employed in science and engineering, Blacks, Native Americans, and Hispanics can be considered underrepresented. Blacks, Native Americans, and Hispanics comprise 1.6 percent, 0.2 percent and 1.9 percent, respectively, of persons actively employed in science and engineering (National Science Foundation, Science and Engineering Indicators, 1991) compared with their representation in the total population, which is 12.1 percent, 0.8 percent, and 9.0 percent, respectively. Since Asians comprise 8.2 percent of all persons employed in science and engineering and they represent 2.9 percent of the total population, they are not considered underrepresented. In this report, underrepresented minority scientists are further categorized with respect to their U.S. citizenship status. The databases of tenured and nontenured intramural scientists, both minority and nonminority, were constructed by the NIH Office of Education.

B. Definition of Tenure

The awarding of tenure in a scientific research institution recognizes the achievement of prominence as an independent researcher and affords the tenured investigator a permanent position as a researcher, with a permanent commitment to provide resources and space for his or her work. All other appointments of intramural scientists at NIH are time-limited and carry no permanent commitment of resources. Nontenured scientists may work in the intramural research programs of NIH either in a training capacity or as a temporary Government employee. Most postdoctoral researchers enter intramural NIH as trainees under time-limited, nontenured appointments in the Intramural Research Training Associate (IRTA) program, or in

the case of the National Cancer Institute, the Biotechnology Training Program (BTP). IRTA and BTP fellows are given time-limited appointments, usually for a maximum of 5 years. At that point, or earlier if offered, fellows in training may be recruited to nontenured, temporary Government employment as staff fellows or senior staff fellows or, in the case of physicians, dentists, or veterinarians, as Commissioned Officers in the U.S. Public Health Service (**Table 1**). These temporary appointments are limited to a total duration of 7 years, at which time the incumbent scientist must either have successfully completed the tenure review process or must find employment elsewhere.

Consideration for tenure as an intramural scientist requires a commitment of resources on the part of the Scientific Director of the institute and successful completion of the tenure review process. That process begins with the proposal of the candidate for consideration by the laboratory or branch chief who supervises the candidate. The tenure process requires a positive review of credentials by the institute's Board of Scientific Counselors; the institute's Promotion and Tenure Review Panel; the NIH Board of Scientific Directors; and the Deputy Director for Intramural Research, NIH. Only after successful completion of these steps is an intramural candidate accorded "tenure" status and a permanent position in intramural NIH. It should be understood that this process for awarding scientific tenure has evolved over the past 3 decades, as additional levels of review and approval were introduced. NIH does not have accurate records of the review process prior to 1970. Tenure and promotion panels were introduced in approximately 1979, at about the same time as review of tenure and promotion actions by Boards of Scientific Counselors.

In addition to the system of appointments for M.D. and Ph.D. scientists employed in the civil service, as outlined above, parallel systems of time-limited and tenure appointments exist for foreign scientists at NIH in the visiting program of the Fogarty International Center, and for physician scientists who are members of the U.S. Public Health Service. Nontenured physicians who participate in patient care must occupy temporary positions of Government employment rather than training, either in the civil service or Public Health Service. These physicians may be converted to tenure either as research scientists, in a process entirely the same as that used to convert Ph.D. scientists, or as service (nonresearch) physicians, a process requiring the assent of the Medical Board of NIH (the Board of Clinical Directors who represent each institute). Service physicians do not have independent resources for research but may participate in intramural research projects as clinicians.

Although scientists who have conducted their postdoctoral research at NIH can achieve tenure only through the process outlined above, it is possible for an institute to hire a qualified outside scientist into a tenured position as a "direct hire." This type of tenure appointment must have the approval of the Deputy Director for Intramural Research, NIH, but does not require the formal tenure consideration by the institute's Promotion and Tenure Review Panel or by the Scientific Directors. This alternative route is infrequently used,

and then for hiring prominent extramural researchers who might otherwise be discouraged by the extended process for persons promoted through the ranks of the intramural research program. A direct-hire position usually requires national advertisement, the appointment of a search committee, and interviews of qualified candidates.

C. Tenured Scientists Data Sources

A database of 1,148 tenured intramural investigators as of October 1, 1992, was constructed using information supplied by the institutes, centers, and divisions of NIH (ICDs), by the Division of Personnel Management, NIH (DPM), and by the Division of Commissioned Personnel. As an initial step, the Scientific Directors were asked to identify tenured investigators in their ICDs. These lists were checked against the list of permanent employees in the relevant scientific and clinical series stored in DPM's database. Additional data elements were obtained from the NIH Commissioned Corps database. Laboratory, branch, and section chiefs were identified using information previously supplied to the Office of Education by the ICDs. Additional information on tenure status was obtained from the Office of Intramural Research, NIH. Scientific Directors were asked to identify and remove from the list of tenured scientists any person serving solely in a support or service capacity and without clearly delineated research responsibilities. Such service personnel were distinguished from collaborative investigators who have primary research responsibilities, who make significant contributions to the research effort, and who are listed as authors. The Scientific Director of each ICD was asked to confirm the final list of tenured scientists. The final list included investigators who had received tenure following favorable review of the Board of Scientific Counselors upon completion of postdoctoral training at NIH, investigators who had received clinical tenure upon review by the Medical Board of NIH, and investigators who were hired directly from the outside.

For all data elements other than racial or ethnic status, inconsistencies and classification errors were resolved by conferring with the ICDs and/or the administrative office supplying the data element. In addition, each of the 1,148 tenured investigators was asked to correct or complete missing information on doctoral degree(s), institutions in which they trained, title (e.g., laboratory or branch chief, section chief, tenured investigator), ICD, laboratory or branch, and section. Of the total of 1,148 tenured scientists, 537 or 47 percent of investigators responded. These data elements were confirmed for 100 percent of the tenured underrepresented minority scientists.

The racial and ethnic status of each of the investigators was obtained from DPM files with clearance of the NIH Office of Equal Opportunity (OEO). Each ICD EEO Officer was asked to review the data reported for the respective ICD. The list of minority scientists for each ICD was forwarded to the respective Scientific Director who was asked to review the list, confirm the tenure status of each investigator, ensure that all under-represented minority scientists from the ICD were listed, and identify any misclassification in minority status.

Every tenured investigator who was identified as an underrepresented minority was asked to reconfirm this information by completing a Race and National Origin Identification (RNO) form, Standard Form 181. Twenty-four of 25 tenured faculty completed the RNO form and confirmed their minority status. One tenured faculty member declined to complete the RNO form.

D. Nontenured Scientists Data Sources

A database of 3,200 nontenured scientists was constructed using data elements supplied by the ICDs, DPM, Division of Financial Management (DFM), NIH, and Fogarty International Center. The database included two categories of scientists: fellows in time-limited Government *employment* positions (appointed positions) encumbering full-time equivalent (FTE) slots and fellows in *training* positions that do not encumber FTE slots. The time-limited employment category includes clinical associates, research associates, senior clinical investigators (nontenured—see **Table 1** and **Appendix F**), epidemiology staff fellows, staff fellows, senior staff fellows, visiting associates, and visiting scientists. The training positions category includes fellows supported by the NIH Intramural Research Training Award, the NCI Biotechnology Training Program, the NCI Cancer Epidemiology and Biostatistics Training Program, the NCI Cancer Prevention Fellowship Program, the NCI General Fellowship Program, and Fogarty's Visiting Fellowship Program.

For fellows in FTE-encumbering positions, DPM supplied names, gender, race and/or ethnic origin, and degree for 1,063 out of 1,119 (95 percent). All underrepresented minority fellows were asked to confirm their status and self-identity with an RNO form.

For the nontenured fellows in training positions, data on degree, gender, and racial and ethnic group were unavailable in a central database and were obtained from each of the ICDs. Unlike fellows in appointed or FTE-encumbering positions, fellows in training positions are not formally recognized as employees and in the past were not routinely asked to complete the RNO form.

With clearance from the Director, NIH Office of Equal Opportunity, all fellows who were listed as an underrepresented minority, whether occupying an appointed (FTE-encumbering) position or a training position, were asked to confirm this information by completing an RNO form. Fellows who had separated from NIH after October 1 were asked by mail to complete the RNO form for purposes of this report. Of the 201 fellows identified as underrepresented minorities, 91 percent responded to this request. Of those responding, 79 percent confirmed their status as listed, and 21 percent corrected their classification. Three of those who corrected their classification changed their classification to another underrepresented group; 6 changed their classification to Asian and Pacific Islander; and 30 changed their classification to white.

E. Data Sources for Evaluation of Recruitment, Training, and Conversion to Tenure

The NIH Office of Education assembled data for 1992 on all NIH-wide programs directed at recruitment and training of high school students, college students, graduate and medical students, and predoctoral and postdoctoral scientists. In addition, special initiatives were examined that are designed to increase the participation of under-represented minorities in intramural programs. Information on the scope of the programs, the numbers of participants, and the educational levels of the participants was compiled from data supplied by each of the participating ICDs, DPM, DFM, and the NIH Office of Education. The sources of data on nontenured fellows were discussed in the previous section. With respect to student participants, Federal policy has previously prohibited asking participants to identify their race or ethnic group. Therefore, racial and ethnic identifications were made by the ICD EEO Officers.

In addition to NIH-wide recruitment initiatives, many of the ICDs have developed their own programs specifically targeting minorities. Information on these programs (their scope, target audience, participation of underrepresented minorities, and any evaluations of the program) was obtained by contacting each ICD. To confirm the accuracy and completeness of this data, summaries of each of the ICD-specific programs were prepared and forwarded to the appropriate ICD EEO officer for review.

Data on conversions to tenure were supplied by the NIH Office of Intramural Research and were available from 1983 forward. Then data were checked against the database of tenured investigators, and discrepancies were resolved with the Office of Intramural Research or with the ICDs.

The distribution of underrepresented minorities in various educational and professional categories of training and employment has been reported in publications from a variety of sources, including the National Science Foundation, the Department of Education, and the Association of American Medical Colleges. Comparisons of NIH data on tenured faculty to that of other major research institutions were performed by pooling data from multiple outside institutions. For purposes of analysis, two groups were constructed. Group 1 consisted of medical schools ranked 1 to 5 on the basis of dollars received through extramural NIH awards in 1992. Group 2 was composed of institutions ranked 6 to 10 in extramural NIH awards in 1992. Group 1 included Harvard University; Johns Hopkins University; the University of Washington, Seattle; the University of California at San Francisco; and Yale University. Group 2 included the University of Michigan, Ann Arbor; the University of California at Los Angeles; Columbia University; the University of Pennsylvania; and Washington University, St. Louis. Group 1 included a total of 1,056 faculty and Group 2 a total of 1,531 faculty, numbers roughly comparable to the total of tenured investigators within the NIH intramural program (1,148).

F. Appointment Mechanisms and Promotions for Tenured Scientists

Intramural scientists may be appointed to a tenured position either in the Civil Service of the U.S. Government or as a member of the U.S. Public Health Service, the latter appointments usually being reserved for physicians, dentists, and veterinarians. In addition, small numbers of high-ranking scientists are appointed through competitive hiring into Senior Executive Service (SES) or Senior Scientific Service (SSS) positions. The majority of the SES appointments are reserved for administrative positions at NIH, while SSS positions are occupied by laboratory scientists.

Scientists who are not permanent residents or U.S. citizens may be accorded "intent for tenure" status, which allows them to remain at NIH until they achieve citizenship, at which time they are converted to permanent status. For purposes of this report, these scientists are considered tenured.

Once tenured, intramural researchers are eligible to receive promotions above entry rank in the civil service or, if commissioned officers, in the U.S. Public Health Service. These promotions depend on the decision of a superior to initiate a promotion action, which then requires review by the institute Scientific Director, the promotion and tenure review panel of the institute, an extramural peer review team, and the board of scientific directors of NIH. For commissioned officers in the U.S. PHS, further approval is required by the Office of the Surgeon General. In addition to these employment rank promotions, intramural scientists are eligible for promotion to higher levels of supervisory responsibility. The progression is from initial tenured appointment as a senior investigator to section chief, laboratory or branch chief, program director, scientific director, and institute director. These programmatic promotions to higher level positions (branch chief and above) usually occur through a competitive process, although it is possible to appoint commissioned officers directly to such a position without open competition.

G. Interviews

The goal of the interview process was to gather information about the impressions of intramural minority scientists regarding recruitment, mentoring, tenure, and the overall experience at NIH. The intramural minority scientists were divided into two groups: tenured and nontenured. All tenured minority scientists were invited to participate in individual interviews and were asked to complete a questionnaire. All nontenured minority investigators in time-limited service fellowship appointment mechanisms and fellows in other training mechanisms were asked to complete a questionnaire and to participate in individual or focus group interviews. The views of nontenured minority scientists were then compared with those of a control group of nonminority nontenured scientists, who were selected for interview as detailed below.

The information-gathering process began in late 1992 and continued through mid-1993 and was conducted by two subcommittees of the parent committee: one was directed towards tenured scientists, composed of tenured scientists from the parent

committee, and chaired by Dr. Griffin Rodgers; and the second, directed towards nontenured scientists, composed of nontenured parent committee members, and chaired by Dr. Michele Evans and Dr. Arlyn Garcia-Perez. Intramural minority scientists received letters announcing the study and enlisting their participation. The letters were followed up with telephone calls. Nontenured minority scientists who agreed to participate in the study were then sent a 4-page questionnaire (see **Appendix C**) designed to elicit information about their education, training, and the NIH work environment. Tenured minority scientists were sent a 3-page questionnaire (see **Appendix B**) that dealt with recruitment, retention, promotion, and research productivity. Among the nontenured scientists, 116 survey questionnaires were distributed and 72 were returned. Survey questionnaires were distributed to all 25 minority tenured scientists and 20 were returned. During the time that participants were returning their surveys, both tenured and nontenured committee members conducted one-on-one interviews of 27 nontenured and 16 tenured minority scientists. These interviews, which were performed by only the committee members who are intramural scientists, used instruments specifically developed by the subcommittees for the data collection of tenured and nontenured scientists.

Because the committee desired to collect impressions from a broad spectrum of nontenured minority investigators, the focus group interview format was also employed to gain the impressions of nontenured scientists who had not participated in one-on-one interviews. Each focus group was composed of no more than six randomly selected participants, a facilitator (who was a committee member from the intramural scientific staff), and a notetaker. Nine focus groups of 33 nontenured scientists were held between April and August of 1993.

During August 1993, nontenured committee members invited by letter 40 nonminority scientists for one-on-one interviews. This control group included at least two individuals from each NIH institute/center and an equal representation of men and women and M.D.s and Ph.D.s. Seventeen nonminority scientists participated in the one-on-one interview process.

III. RESULTS: NUMBERS OF UNDERREPRESENTED MINORITY SCIENTISTS IN THE INTRAMURAL NIH

A. Tenured

As of October 1, 1992, there were 1,148 tenured intramural scientists at NIH. Of these, 25 or 2.18 percent were identified as underrepresented minorities (see **Figures 1-3** and **Table 2**); 0.70 percent were Black, and 1.48 percent were Hispanic. There were no tenured Native American or Alaskan Native scientists in intramural NIH. All eight of the Black tenured scientists were educated in the United States and were citizens of the United States when they first came to NIH. Only 8 of the 17 tenured Hispanic scientists were educated in the United States and came to NIH as citizens; the remaining 9 came to NIH through the visiting program as citizens of foreign countries. Thus, only 16 (8 Black and 8 Hispanic) of the 1,148

tenured intramural minority scientists (1.39 percent) are U.S.-educated. Three of the 17 Hispanic scientists have "intent for tenure" and will be formally tenured once they become U.S. citizens or permanent residents. Of the 25 underrepresented tenured scientists, five (three Blacks and two Hispanics) were direct hires into tenured positions, while 20 achieved tenure through the intramural tenure review process.

As compared to other tenured investigators, minority scientists were clustered at the level of investigator with little or no representation at the levels of section chief and laboratory and branch chief. As shown in **Table 2**, white scientists, who comprise 90.7 percent of all tenured scientists, represent 92.1 percent of section chiefs and 96.9 percent of laboratory and branch chiefs. Blacks, who comprise 0.70 percent of all tenured investigators, represent 0.27 percent of section chiefs and 0.44 percent of laboratory or branch chiefs. Similarly, Asians and Pacific Islanders, who comprise 7.14 percent of all tenured investigators, comprise 6.01 percent of section chiefs and 1.78 percent of laboratory or branch chiefs. The distribution is slightly different for Hispanics, who comprise 1.48 percent of all tenured investigators. Hispanics are proportionately represented at the level of section chief, 1.64 percent, but are underrepresented at the level of laboratory and branch chief, 0.89 percent. Sixty-six percent of all minority scientists (Blacks, Hispanics, and Asians) are investigators; 27 percent are section chiefs; and 7 percent are laboratory or branch chiefs. By comparison, 47 percent of whites are investigators; 32 percent are section chiefs; and 21 percent are laboratory or branch chiefs.

Among the 64 positions of scientific leadership, including institute directors, scientific directors, and clinical directors, two individuals (3.1 percent) are underrepresented minorities. These include one institute director identified as Black and one clinical director identified as Hispanic.

The racial and ethnic distribution of tenured investigators by gender is depicted in **Figures 2** and **3**. Among males, 91.5 percent of tenured investigators are white; 6.39 percent are Asian American/Pacific Islanders; 0.63 percent are Black; and 1.47 percent are Hispanic. Among female tenured investigators, Asians represent 10.8 percent, Blacks 1.03 percent, and Hispanics 1.55 percent. Although minorities comprise a higher fraction of the tenured female scientists than tenured male scientists, it should be recognized that the total numbers are very small. Among 194 tenured women scientists, only 5 are underrepresented minorities (2 Black and 3 Hispanic). By comparison, among tenured men there are 20 underrepresented minority scientists (6 Black and 14 Hispanic).

B. Nontenured

As of October 1, 1992, there were 3,200 nontenured intramural scientists at NIH. Of these, 165 or 5.15 percent were identified as underrepresented minorities (**Table 3** and **Figure 4**). Eighty-one (2.53 percent) were Black, 83 (2.59 percent) were Hispanic, and 1 (0.03 percent) was a Native American. Of those 165 nontenured minority scientists, 19 Blacks and 53

Hispanics were at NIH as participants in the visiting program. Therefore, 72 (2.25 percent) of the 165 nontenured minority scientists were at NIH as citizens of foreign countries and only 93 of 3,200 (2.90 percent) nontenured intramural scientists were U.S. citizens from underrepresented minority groups.

The ethnic distribution of fellows who were U.S. citizens or permanent residents is shown in **Figures 5–9** and that of foreign fellows is shown in **Figure 10**.[4] The percentages of underrepresented minorities in the ranks of nontenured scientists vary from approximately 5 to 10 percent for the larger institutes, with the exception of NIMH (2.5 percent). In comparing the number of underrepresented minority scientists with those of other racial groups, the most striking difference is the vastly higher percentage of Asians and Pacific Islanders, who comprise 40.4 percent of foreign fellows (**Figure 10**) and 12.1 percent of U.S. fellows (**Figure 5**). Blacks comprise 1.1 percent of foreign fellows and Hispanics 3.2 percent of the same pool (**Figure 10**), while Blacks are 4.0 percent and Hispanics 2.0 percent of the pool of nontenured U.S. fellows (**Figure 5**).

The distribution of all domestic fellows by ICD is shown in **Figure 11**. Among the various ICDs, a median of 5.6 percent of nontenured scientists are underrepresented minorities.

IV. INTERVIEWS AND SURVEYS OF TENURED AND NONTENURED SCIENTISTS

A. Tenured

Of the 25 scientists identified as tenured underrepresented minorities in the intramural program, 20 completed written surveys, 2 declined to complete the survey, and 3 did not respond to the request (see **Appendix B** for survey). The results of the surveys are summarized below. For most questions, there were some answers that could not be classified as yes or no. The statements that follow are based on written responses as well as individual interviews with the tenured minority scientists.

Because of the small number of tenured minority scientists, the results of their surveys are presented in a thematic or qualitative manner, rather than quantitatively. The themes brought out by the surveys pertain to the topics of recruitment, retention, promotion, research productivity, and recommendations.

1. Recruitment

When asked if their institute and lab/branch actively recruit minorities, most responded that they do. However, when asked if their institute and lab/branch appropriately support the advancement of minorities in general, once hired, most responded that they do not.

2. Retention

Most questions dealt with the area of retention and the NIH work environment. Specifically, the results are as follows:

- Most respondents found role models at NIH, although many said their role models are not minorities.
- Most respondents felt that they have had to be significantly better than their nonminority counterparts to get ahead.
- Half of the respondents believe they have encountered discrimination in their dealings with coworkers at NIH, whether in covert or overt forms.
- The majority of respondents are generally happy with their current position at NIH; most would pursue their career at NIH again if they had an opportunity to do it over.

3. Promotion

When asked about the most positive factors provided by their advocates in the tenure process, the words "support" and "recognition" were repeatedly cited. Specifically, respondents stated that their advocate in the tenure process

- Recognized respondent's scientific experience and pioneering work
- Offered adequate support in terms of allocation of resources
- Offered constant moral support throughout the process
- Helped with establishing excellent research collaborations and exposure
- Shared concern for respondent's scientific career
- Strongly supported promotion

Most felt that their laboratory or branch chief had

- been forthright and clear about position and tenure potential
- shown respect for respondent's ability
- provided opportunity to grow
- respected their ability to work independently and to be able to supervise respondent's own group of people
- been nurturing early in the tenure process, so that respondent could be independent
- offered consistent support of work and advancement
- nominated respondent for awards
- offered support through tenure process

However, some respondents had difficulty citing positive factors provided by their supervisor. They responded:

- "My branch chief...tried by all possible methods to convince me to leave. The most positive factor was that he did not fire me. He provided no support other than my own slot."

- The branch chief "has tenured few (persons in general) and only male candidates."

4. Research Productivity

Approximately three-fourths responded that their personal research productivity has been recognized with appropriate allocation of resources, with promotion, and with greater administrative and scientific responsibilities.

5. Recommendations

The survey asked respondents to rank five options in order of importance for efforts to recruit and retain minorities at NIH, with 1 indicating a high ranking and 5 a low ranking. The results are given below.

6. Conclusions

a) Surveys

(1) Most respondents believe that the ICDs are committed to the active recruitment of minorities. However, they perceive that this objective is not effectively implemented at the operational level of the laboratory/branch chiefs.

(2) The absence of conspicuous minority role models at high levels, along with a climate in which tenured minority scientists feel they still need to prove themselves, creates an environment that negatively affects the productivity of the minority tenured investigators. This belief is especially prevalent among Black scientists and Hispanic scientists with noticeable accents.

Program	**Average Ranking**
More aggressive postdoctoral recruitment of minority scientists.	2.00
Appointment of minority scientists to leadership roles at NIH.	2.47
Reform of tenure and promotion procedures.	3.12
Establishment of a formal tenure track system for postdoctoral fellows.	3.38
Establishment of a graduate school of biomedicine at NIH.	4.03

More aggressive recruitment received the highest ranking (2.00). Establishment of a graduate school of biomedicine received the lowest ranking (4.03).

(3) Allocation of resources and mentoring are important factors that supervisors can and must provide during the tenure process.

b) Interviews

(1) Tenured minority scientists feel that the general notion that there are not enough qualified postdoctoral minority candidates (for NIH positions) runs counter to both published data (see *Science* 258:1176, 1992) and collective personal experiences. Even if the numbers are small, it is their belief many qualified candidates can be found in the existing pool of minority graduates. Minority scientists at all levels of NIH (both intramural and extramural) should be enlisted in the effort to find effective strategies for recruitment.

(2) The lack of critical numbers and visibility of tenured minority investigators at the level of section chief and higher tends to discourage nontenured scientists, decreases their chances of attaining a permanent position, and adversely affects recruitment efforts.

(3) A mechanism should be established for ongoing review of recruitment, retention, and promotion of minority scientists, including a systematic tracking of individuals at all stages (recruitment, retention, promotion). This information would be of value in determining whether established and newly implemented policies and programs have their desired effect.

B. Nontenured

1. Surveys

A total of 116 survey forms (**Appendix C**) were mailed to all personnel classified as "nontenured intramural minority scientists" and 72 responded. The survey questions deemed to be most informative about the general characteristics of the nontenured minority respondents were numbers 1, 2, 3, 8, 9, 11, and 12. The answers to these questions and some conclusions derived from them are presented here.

It must be noted that because the survey was the first information-gathering vehicle, it was not apparent until after the responses were received that a substantial number (33.3%) of the respondents were not underrepresented U.S. minorities, but rather foreign nationals.

Question 1: What college, graduate, professional school(s) did you attend?

The majority of survey respondents attended college at state (21.7%) or private (non-Ivy League) (21.7%) colleges and universities. Thirty-three percent (33.3%) of respondents were foreign nationals who attended foreign colleges/universities. The remainder of respondents was distributed as follows: 10.1% from historically Black colleges/universities, 5.8% from historically Hispanic colleges/universities, and 7.2% from Ivy League institutions.

In terms of graduate/professional schools, most of the respondents graduated from state (26.9%) or private (non-Ivy League) (17.9%) schools. Thirty-one percent (31.5%) graduated from foreign schools

(these were foreign nationals). The distribution of the remainder of respondents was: 11.2% from historically Black schools, 4.5% from historically Hispanic schools, and 7.9% from Ivy League schools.

Conclusion: The number of underrepresented minority intramural scientists is inflated by inclusion of foreign nationals. However, among U.S. graduates, less than one-fourth attend historically Black or Hispanic colleges or graduate schools.

Question 2: What is your highest degree?

The majority of respondents were Ph.D.s (55.6%). Thirty-seven percent (37.5%) were M.D.s.

Question 3: Before you came to NIH, did you have prior research training elsewhere? Where?

The great majority of respondents (86.1%) had prior research experience. Of these, 18% had trained at a foreign university or industry, 18% at state universities, 23% at private (non-Ivy League) universities, 11% at Ivy League universities, 10% in U.S. Government laboratories, 8% in private industry, 6% in historically Black universities, and 4% in unidentified institutions.

Question 8: Which NIH institute now employs you?

The largest percentage of respondents (22.5%) were employed by NCI, the largest institute. NIEHS followed with 11.3% of respondents. The remainders were as follows: NICHD (9.9%), NIDDK (9.9%), NINDS (9.9%), NEI (5.6%), NIA (5.6%), NIAID (5.6%), NIDR (5.6%), NHLBI (2.8%), NIAAA (2.8%), NIAMS (2.8%), NIDA (2.8%), NIDCD (1.4%), and NIGMS (1.4%).

Question 9: Do you understand the tenure process currently followed by your institute?

It should be noted that the survey was distributed and returned by respondents before the current NIH-wide Career Development Policy was in place or had been widely publicized.

The majority of respondents (55.6%) did not feel that they understood the tenure process in their institute as it existed when they completed the survey. Twenty-five percent (25%) felt they understood the process and 19.4% were uncertain or did not answer the question.

Question 11: How did you learn about the position at NIH for which you were hired?

Approximately forty-four percent (43.7%) of respondents had applied after seeing the position advertisement in scientific journals or had initiated the pursuit of their position. Forty-two percent (42.3%) had obtained their position through personal contacts at NIH. Eleven percent (11.3%) had been directly recruited to open positions. Only one respondent had come to NIH as a result of the Stay-in-School program.

Conclusion: Advertisements appear to be an important tool for attracting minority scientists to NIH. However, few minority scientists are being actively and directly recruited. From this series of interviews,

targeted recruitment of minority scientists appears to have had limited impact on the composition of the postdoctoral training programs at NIH. Among the few scientists who were directly recruited, the ICD director and the laboratory/branch or section chiefs were mentioned in 50% of the cases. Scientific directors were never mentioned. This suggests that the senior scientific staff has not been active in targeted recruitment of minority scientists or direct dissemination of information to minority scientists regarding NIH career opportunities. The Stay-in-School Program is not functioning as a mechanism to introduce students to NIH professional scientific careers.

Question 12: Before you worked at NIH, did you participate in any training activities on campus?

The great majority (86%) of respondents had not participated in NIH campus training activities (e.g., summer programs, Stay-in-School programs, clinical electives, etc.).

Conclusion: NIH has not built a successful pipeline to the intramural program through which minority students can progress.

2. Interviews

a) Nontenured Minority Scientists Interviews

The committee responsible for interviewing the nontenured minority investigators developed an interview guide, which explored a range of subjects (**Appendix D**). The summarized responses include the major topics discussed in the one-on-one interviews and focus groups.

(1) Assessment of NIH Work Place Environment

(a) Scientific Guidance and Mentoring

The issue of mentoring was integrally involved in all answers to this section of the interview guide. Forty-one percent of interviewees described relationships with their immediate supervisors that were productive, supportive, and "mentoring." On the other hand, 41% said that their relationships with immediate supervisors were not productive or supportive. Often, the frustration felt by these respondents had escalated into a tense or confrontational interaction. In other instances, there was no meaningful interaction between the supervisor and the respondent. Eighteen percent of those interviewed believed that they had a relationship of mutual respect with their supervisors but did not consider this a productive or mentoring relationship. Therefore, most nontenured minority investigators interviewed believed that they had relationships with their supervisors that were neither supportive nor scientifically productive. Whatever the quality of individual supervisory relationships, 99 percent of respondents felt that mentoring was a critical component for success in science.

Consequently, those who believed that they had inadequate relationships with supervisors and were not exposed to the benefits of mentoring were at a disadvantage in competing for advancement of their career in science. When asked

about the factors that contributed to inadequate mentoring, most scientists cited the inaccessibility of the supervisor. The supervisors (branch/lab chief in each case) have too many individuals to supervise or are inaccessible for other reasons (administrative functions, travel, meetings). Most individuals would prefer supervision by scientists who are accessible and who will invest the time in providing more one-on-one supervision and guidance. The individuals who had positive relationships with their supervisors also considered accessibility a critical factor.

Accessibility aside, a good mentor was described as follows: one who provides guidance while simultaneously allowing an increased degree of independence as training progresses—the mentor must sense the degree of guidance that each young scientist requires and provide it; one who is knowledgeable and generous in sharing that knowledge; one who has specific goals and ideas and can express them effectively to her/his mentee; a successful scientist who must be a role model not only in terms of her/his scientific knowledge but in her/his conduct in the lab and with the outside scientific community; and one who goes above and beyond self-interest to promote the career of the junior scientist.

The scientists with productive supervisory interactions believed that their careers were developing in a positive manner. They also received regular evaluation regarding their performance level and had discussions with their supervisors about their potential for career development at NIH. This subset of interviewees also knew most about the tenure process as it existed within their particular institutes and had discussed with their supervisors their potential for tenure in their respective institutes. Those who had inadequate relationships with their supervisors (the majority of those interviewed) had significant doubts about the status of their career development. They were not regularly evaluated regarding their performance (except commissioned officers who are evaluated at regular intervals). This group did not understand the tenure process, and few, if any, had discussions regarding their future within the NIH intramural program. Physicians pursuing "clinical" research (up to 50 percent of time involved in research), regardless of whether they had mentors, were uncertain about clinical tenure and opportunities for them to remain at NIH as senior clinical staff.

Whatever the status of the relationship with their supervisors, several interviewees reported that the process of extension and renewal of appointment, especially when done yearly, was disconcerting. This was particularly unsettling if no official confirmation of extension or renewal was received until shortly before the term of appointment expired. Though it was widely understood that bureaucratic channels and budgetary constraints may result in what appears to be a "last minute" approach, it was also perceived as a sign of lukewarm support and weak commitment to the researcher. Some deal with career uncertainty better than others. However, the NIH approach to appointment renewal and extension may drive away junior investigators, minority investigators in particular.

(b) Individual Scientific Progress

The intramural nontenured minority scientists interviewed appeared to be diverse in terms of their prior research training and current interests. Despite their lack of access to supervisors and intra-laboratory competition for limited research resources, they found no intentional impediments to their individual scientific progress. However, a significant number of respondents felt that although their supervisors often provided resources for their research, they did not consistently show interest in or provide the necessary input for the implementation of the fellow's research. A significant number changed their research topics several times during their first 2 years at NIH and are currently involved in three to seven research projects. It is also of note that most scientists considered themselves as technically and scientifically competent but weak in preparing scientific manuscripts. Overall, the lack of scientific guidance and mentoring was cited most frequently as the factor that adversely affected the scientific progress of the intramural minority scientist. This was particularly noted to occur at the crucial early period of their scientific careers when its possible effect on research productivity (i.e., in terms of papers published) would be most detrimental.

(c) Conduciveness of NIH Work Place to Scientific Productivity

Although most nontenured investigators interviewed felt fairly comfortable in the NIH work environment, it required a significant period of adjustment and a continuing effort by the minority investigator to "fit in." Many reported that they felt a certain hostility at NIH toward anyone new to the intramural program, particularly minorities. Minorities who occupy professional positions are conspicuous and must work hard to establish a level of comfort with the nonminorities with whom they work. They must also prove at the outset of their appointment that they are legitimate, well-trained scientists who were not hired because of their race. Interviewees from historically Black institutions felt that their credentials were particularly suspect because they had not received their degree at a majority institution. Respondents frequently reported that minority investigators felt they had a harder time succeeding within the intramural program because of pre-formed perceptions about members of minorities harbored by non-minorities at NIH and in society.

Once individuals have adapted to the NIH environment, most are happy with their choice to come to NIH. However, a small number (3.3%) of respondents had experienced specific racial/ethnic/sexual discrimination. The problems for these individuals were severe and forced them to locate new laboratory positions, to leave the NIH intramural program, or to leave NIH and science completely.

The tenor of working relationships within the lab or branch was to a large degree set by the lab/branch chief. Most respondents felt that they had established good working relationships among their colleagues. However, many noted that despite their best efforts, it was often difficult to communicate with foreign scientists. While many

felt that there was a competitive atmosphere in their environment they did not feel that this was detrimental to productivity. Others reported that they felt the pressure and competitiveness encouraged by some lab/branch chiefs had engendered fear of failure and intolerance, and this environment was counterproductive to the ultimate scientific success of individuals within the laboratory.

All respondents said that there were several distinct advantages at NIH. The most frequently cited included the prestige of the institution, the varied ongoing research, the number of distinguished scientists, and the overall research resources available. Some specific disadvantages of NIH included low salaries, absence of loan forgiveness programs for those not involved in HIV-related research, narrow clinical fellowship training, poor administrative and managerial skills of lab/branch chiefs, inadequate space allocation, and the non-university setting. Despite the difficulties with the NIH work environment and the cited disadvantages, most respondents said that they did not regret coming to NIH and would do so again. Ten percent felt that coming to NIH was a mistake and stated that despite the training opportunities available, NIH was not the best environment for career development regardless of its impressive material resources. Seven percent were uncertain if they were correct in choosing NIH for postdoctoral training.

(d) Future Plans at NIH and General Career Objectives

Only 28 percent of the nontenured intramural scientists interviewed said that they hoped to achieve scientific tenure at NIH. These scientists were informed about the tenure process because of discussions with their immediate supervisor or branch chief. However, 40 percent of the nontenured minority investigators interviewed never discussed the tenure process with their immediate supervisor. These scientists did not understand the requirements for tenure, nor had they read published requirements regarding the tenure process.

Scientists who did not plan to seek tenure at NIH (50 percent) enumerated several reasons for wanting to leave NIH: 1) they were led to believe that they were not qualified to succeed in research and therefore did not believe that they would be tenured at NIH even if they tried; 2) the NIH clinical experience did not measure up to their expectations; 3) the salary structure at NIH was not competitive with academia or industry; and 4) they wanted to work in an academic/teaching environment. All of the nontenured scientists strongly expressed a desire to continue a career in basic or clinical research. Most stated that upon leaving NIH they hoped to obtain a university position.

Minority physician scientists hoped to find clinical academic positions that would allow them to do clinical work as well as basic biomedical science. The physicians interviewed believed that it was vital to continue clinical work in some form to maintain their skills, but most felt that opportunities for them to do clinical work at NIH were severely limited, unless they were located in a branch or lab that had responsibility for direct patient care and they were involved in these protocols.

Even if they were in a clinical branch, it was often difficult to participate in a regular clinical activity. Going to clinic or to rounds in the role of observer was not adequate for maintaining clinical skills. It was also mentioned that those who sought clinical involvement outside NIH were discouraged by the stringent rules on outside activities. In addition, many physician scientists were also disappointed that NIH treats a highly selective group of patients whose racial and ethnic diversity does not always reflect the racial or ethnic groups that have the highest incidence or mortality from the condition.

(e) Perceptions/Impressions of NIH "Culture"

All of the minority intramural scientists interviewed felt that the strength of NIH was the research environment. The attractiveness of this strong research environment was significantly undermined and its potential opportunities overshadowed by several additional negative perceptions voiced by minority scientists: 1) the significant under-representation of minority patients in clinical trials; 2) the pervasive attitude that the number of publications defines one's productivity; 3) "the culture of science as practiced at NIH is counter-productive and frequently antagonistic to the culture of Black and Hispanic scientists"; 4) communication networks exist that often exclude minority scientists; 5) being a woman and a minority scientist is particularly difficult in an environment where most minority women hold subordinate and nonprofessional positions; 6) the widely held perception at NIH that Blacks and Hispanics are inferior intellectually, while Asians and whites are considered superior and are more likely to succeed in science; 7) it appears to be easier for a foreign scientist to advance his/her career at NIH than it is for Black and Hispanic scientists; and 8) recruitment is used as the only measure of what is being done to improve the low numbers of minority scientists, while there remains no organized effort for career development and retention of minority scientists within the NIH intramural program.

(f) Minority Women

While there were no specific questions regarding minority women scientists or particular questions addressed to the female minority scientists, many interviewees spontaneously commented on the particular burden borne by minority female scientists in the intramural program. Male participants expressed concern over the lack of women and particularly minority women in visible positions within their institutes especially at the branch/lab chief and scientific director level. Those interviewed also felt that minority women were poorly treated unless they put forth special effort to gain respect from their colleagues. Female minority scientists noted that women in general, and particularly minority women, were at a greater disadvantage than males at NIH (and in science in general). Sometimes white male peers with similar credentials were preferentially and rapidly moved along to tenure ahead of minority females who had been at NIH for longer periods of time. Some noted that the NIH environment was difficult not only because of race but also because of gender. "As a minority woman you immediately stand out and can call attention to yourself by simply

wearing a dress, earrings, or lipstick. This makes you appear in the eyes of many as less serious or incompetent." Some women noted that their immediate supervisors viewed them as highly trained technicians who would not become independent investigators. The issue of being a minority woman can be particularly limiting in establishing necessary collaborations within the NIH intramural or extramural community. This is especially difficult if the desired collaborator is from a cultural tradition in which women do not hold positions of authority and do not pursue science. Male and female respondents suggested that minority women were often viewed as less competent than their nonminority female peers.

3. Control group interviews

a) Nontenured, Nonminority Scientists

(1) Assessment of NIH Work Place Environment

(a) Scientific Guidance and Mentoring

Forty-three percent of nonminority scientists believed that they were not receiving adequate mentoring or maintaining productive and supportive relationships with their supervisors. As in the responses of minority scientists, this group felt that the major deterrent to a good relationship was accessibility to their supervisor. They also stated that their supervisor (a lab/branch/section chief in all cases) was remote and unaware or uninterested in their career goals and aspirations. This was believed particularly by the nonminority women interviewed. Seventy percent of the women believed that nonminority men at the same stage of career development were provided with special opportunities to network and interact with the lab/branch chief and other senior scientists. Further, they believed that these senior scientists viewed male junior scientists as goal-oriented whereas women scientists were not taken seriously as scientists. The women interviewed felt that while men with families were viewed as stable, responsible and deserving of high expectations in terms of productivity, women scientists with families, and especially women who became pregnant, were seen as having divided loyalties and as less able to pursue the rigors of a career at the bench. Of the 57 percent of nonminority scientists who considered their mentoring adequate, many did not feel that the relationship was fully productive or supportive. All of the non-minority scientists considered good mentoring a critical component for ultimate success in science. Their description of a "good mentor" was the same as that given by minority scientists. Sixty-nine percent of respondents had mentors outside of NIH, most from their graduate or medical school experience. Forty-three percent of the nonminority scientists interviewed had no discussions with their supervisors about their level of scientific performance or about the tenure process at NIH.

(b) Individual Scientific Progress

As with the nontenured minority scientists, the nonminority scientists interviewed appeared to be diverse in terms of their prior research experience and current interests. The main difference between the two groups was the number of projects in

which the scientists were involved and the frequency with which they had to change projects. In contrast to the group of minority scientists interviewed (in which a substantial number changed their research topics several times during their first 2 years at NIH and were currently involved in three to seven research projects), 70 percent of nonminority scientists did not have to change projects, and 85 percent were currently involved in a single primary research project in which they were clearly the principal investigator. Ninety-five percent of the nonminority scientists believed that they were working on projects considered to be a high priority within their lab/branch/section.

(c) Conduciveness of NIH Work Place to Scientific Productivity

Eighty-five percent of the nonminority scientists were comfortable in their work environments. Eighty-eight percent enjoyed good working relationships with their peers and felt that their ideas and abilities were respected. Notably, as was the case with most minority scientists (who felt that they needed a significant period of adjustment and continued effort on their part to "fit in" the environment), all of the nonminority scientists who had encountered these difficulties were women. As with minority scientists, these women felt that they had to prove their competence in a much more rigorous manner than nonminority men scientists. In addition, the feelings of isolation described by some minority scientists because of their severe underrepresentation at NIH were similarly cited by many women nonminority scientists. Aside from these differences, the advantages and disadvantages of the NIH environment were described equally by minority and nonminority scientists. Eighty-five percent of nonminority scientists would again choose to come to NIH.

(d) Future Plans at NIH and General Career Objectives

Fifty-six percent of nonminority scientists felt well informed about the tenure process at NIH, planned to pursue tenure, and believed that they would be tenured. When asked the same question only 28 percent of minority scientists hoped to achieve scientific tenure at NIH. Notably, 90 percent of the nonminority scientists were unaware of the actual low percentage of tenure conversions or the restrictions on the number of NIH tenured positions that maintains this low percentage level of conversion to tenure NIH-wide. Eighty-five percent of the nonminority scientists interviewed planned to continue in basic or clinical science whether at NIH or outside in an academic environment. The other 15 percent planned to continue as science administrators.

(e) Perceptions/Impressions of NIH "Culture"

Positive perceptions of NIH were equivalent to those expressed by the minority scientists, the strength being the research environment and the facility of interaction with a number of outstanding scientists. Negative perceptions were most often expressed by the women nonminority scientists who felt that their gender affected their ability to access the best of what NIH

has to offer in terms of scientific training, collaborations, and career development.

(f) Overall Conclusions

The nontenured minority scientists felt that NIH is a "microcosm of society" that has yet to come to terms with what they feel is a widely held perception that minorities (Blacks and Hispanics) are somehow inferior, less intellectually competent, troublesome, and interested in getting something for nothing. Most felt that these perceptions are clearly operative at NIH and have resulted in the marginalization of minority scientists. Minority scientists feel they must constantly prove their worth, a feeling that is frequently destructive to the self-image of minority scientists. Nonminority scientists who come to NIH are more able to develop a sense of themselves in science through interactions with other scientists. The "self image" of a number of minority scientists is thus formed in reaction to the perceived intellectual undermining that occurs in this environment. To succeed, minority scientists feel they must find ways above, around, and beneath the usual pathways to success.

Based on these interviews, as well as their own experience, members of the nontenured minority subcommittee concluded that the same perceptions and attitudes toward minorities that present obstacles to full inclusion in society exist at NIH as well. These barriers are even more pronounced in a highly competitive environment like NIH. The impact of social interactions and perceptions and cultural differences cannot be overstated. As social animals scientists seek to align themselves with those they most resemble. Significant progress in addressing these problems will only occur when society and NIH recognize the problems in social interactions and attitudes as outlined above, and seriously address them.

(g) Recommendations from the Minority Scientists Who Were Interviewed

Suggestions to improve the research environment for nontenured scientists offered as part of the interview process included:

i) Increase the number of minority investigators at NIH by directing recruitment efforts at historically Black and Hispanic colleges and universities.

ii) Reward lab chiefs for providing a supportive, mentoring environment for junior scientists. To achieve this goal, a system must be developed to evaluate the effectiveness of the mentor/mentee relationship and to provide feedback.

iii) Increase the number of senior level minority scientists by aggressively searching for qualified minority investigators. These minority scientists can serve two useful purposes, first as role models for other minority investigators, and secondly to show a true interest in retention of highly qualified minority candidates.

iv) Scientific directors should encourage participation of minority scientists in intramural seminars as well as participation as speakers at intramural and extramural NIH conferences.

v) NIH should consider sponsoring a yearly conference on minority health led by the present group of NIH minority scientists.

vi) There should be regular meetings for the intramural staff, particularly branch/lab and section chiefs focusing on the importance of cultural diversity at NIH, respect for cultural diversity, and management of human resources.

V. RECRUITMENT, TRAINING, AND CONVERSION

A. Overview

Recruitment is the first element in a continuum that includes training, independent research opportunities, and tenure. All elements must be in place to attract talented candidates. A perfunctory recruitment effort in an era of increasing competition among academic centers is ill fated. Similarly, a mediocre training program or the perceived absence of authentic long-term opportunities for retention can quickly undermine aggressive recruitment efforts.

The survey of recruitment and training programs relevant to attracting underrepresented minorities into the intramural program considered programs in two major categories—programs for high school, college, and predoctoral students, and programs for postdoctoral fellows. Since programs in these two categories differ significantly in their immediate objectives and overall scope, they will be discussed separately.

B. Student Programs: Recruitment and Training

Many programs exist for students on the NIH campus. A number of these programs operate NIH-wide and can involve hundreds of students, although some NIH-wide programs have as few as 10 students. Other programs operate out of individual ICDs and are run by dedicated scientists, EEO officers, and others. Nearly 40 programs specifically designed to increase the participation of underrepresented minorities in the biomedical sciences were identified in the ICDs.

The programs fell into five major categories—adopt-a-school programs, short enhancement experiences, workshops, courses, and internships. In adopt-a-school programs, an ICD identifies a school with a predominantly underrepresented minority enrollment. Scientists from the ICD visit classes on a regular basis, providing lectures or scientific activities. Students in turn are invited to tour NIH and apply for summer internships. Short enhancement experiences consist of tours of NIH or laboratories, meetings to inform students about educational opportunities, lectures about exciting scientific discoveries or other brief activities designed to engage students and encourage them to pursue more extended experiences. Workshops include activities focused on particular topics designed to channel students into science. Often these include career workshops or workshops on strategies for pursuing scientific careers. More extended experiences include courses such as the 7-week course in molecular biology, bioethics, and other topics for high school students offered by the Office of Education.

Such courses can be designed to encourage students to apply for summer research internships.

The research internship, the most intensive of experiences offered by NIH, immerses the student in the laboratory effort as a member of a team investigating a particular scientific question. Internships also involve the greatest institutional commitment in terms of resources and time. During the internship students often receive a stipend that can range from $800 to $1,600 per month; a preceptor (usually a tenured scientist or postdoctoral fellow) works closely with the student throughout the internship period; and the laboratory provides the requisite reagents, equipment, and supplies to the student. For purposes of the current analysis, only laboratory research internships were considered relevant to the purposes of the report. Stay-in-school positions and the NIH Summer Jobs Program were not included because of the disparate nature of responsibilities, which range from the purely clerical to laboratory positions that often allow little participation in research.

In addition to the programs for students, courses and internships are offered for secondary science teachers who may return to the classroom and influence students to pursue careers in research.

A summary of the participation of underrepresented minorities in the various student programs is depicted by educational level in **Figures 12** and **13**. **Figure 12** summarizes the participation of underrepresented minorities in brief experiences designed to engage student interest in science or scientific careers. These include adopt-a-school programs, short enhancement experiences, workshops, and courses. For the most part these programs are designed for students at the college or high school level and specifically target either minorities or both women and minorities. At the precollege and college level these programs reached over 400 students, 91 percent of whom were underrepresented minorities. One precollege course targeted both women and minorities for a 7-week lecture-laboratory experience in molecular biology; the level of participation of underrepresented minorities, although respectable at better than 35 percent, was somewhat lower than the other programs which specifically targeted only underrepresented minorities.

Figure 13 depicts by educational level the participation of underrepresented minorities in intramural internship experiences. Since many of the over 1,000 interns participate in intramural research experiences through the NIH Summer Internship Program or related efforts that do not specifically target minorities, this pathway is distinguished from those internship efforts that specifically target underrepresented minorities or both women and underrepresented minorities. In 1992 the NIH Summer Program attracted 911 high school, college, medical, and graduate students, and 15.2 percent of these were underrepresented minorities.

Internship programs specifically targeted to underrepresented minorities (labeled Other Programs in **Figure 13**) increased the overall participation of underrepresented minorities to 23.8 percent of all interns, and to 31.8 percent, 21.9 percent, 24.8 percent, and 16.7 percent at the high school, college, medical school, and graduate

school levels, respectively. These percentages compare favorably with the proportion of underrepresented minorities in nationwide pools at the various educational levels (**Figure 14**).

The participation of underrepresented minority students in summer internships by ICD and OD is shown in **Figure 15**. Students enter either through the regular NIH Summer Program for high school, college, medical, and graduate students or through other more specialized programs that specifically target minority or women and minority students. The contributions of both the regular NIH Summer Program and these other programs to the effort to involve underrepresented minorities in summer internships are shown in **Figure 15**. Underrepresented minorities comprised 23.8 percent of all participants in NIH internships in 1992—a number that slightly exceeds the representation of these groups in the general U.S. population (21.9 percent).

Several points are worthy of note with respect to the ICDs with sizable summer programs of 15 or more students. In several institutes—NIAAA, NEI, NICHD, NIEHS, and NIMH—the level of participation of underrepresented minorities approximated or fell below what might be expected from the relevant pool sizes of college and medical students. The pool sizes provide an estimate of the expected level of participation if underrepresented minority students were to apply, and were selected, in proportion to their representation in the population of college or medical students interested in the biological or biomedical sciences. (As discussed below in the Analysis Section, there are no recent data on underrepresented minorities in high school who declare an interest in science. In 1977, underrepresented minorities were estimated to comprise 12 percent of high school sophomores interested in science and engineering [NSF].) In contrast, in NIAID, NCI, and NINDS, the participation of underrepresented minorities exceeded the expectations from the relevant pools and approximated levels of minorities in the general U.S. population. Several ICDs and the OD achieved even greater levels of participation. In NHLBI, NIA, NIAMS, NIDR, NIDDK, and OD, underrepresented minorities comprised 30 to 42 percent of students participating in internship experiences.

Of the nearly 250 underrepresented minority research interns, 57 percent entered through the NIH Summer Program, 22 percent through MARC, 12 percent through OD programs run most often through or with the OE, and 10 percent through special ICD programs (**Figure 16**). The NIH Summer Program with its targeted recruitment efforts is responsible for nearly 60 percent of the underrepresented minority interns. In addition to OE initiatives, several of the ICDs including NIA, NIAID, and NINDS make special efforts to attract minority students into the NIH Summer Program.[5] The MARC program accounts for over half of the underrepresented minority interns participating outside of the regular NIH Summer Program. MARC program participants commented on the importance of summer internship experiences in their decision to pursue careers in biomedical research (NIGMS Evaluation Results). Recent evaluation of the NIH Summer Program includes similar

comments, but none of the student groups has been followed long enough to determine if participants will indeed enter research careers. There has been formative evaluation of a number of the OD programs, but again students have not been followed long enough to determine their career paths. Many of the special ICD programs have not been formally evaluated.

C. Postdoctoral Fellows: Recruitment, Training, and Conversion

1. Recruitment NIH-wide

Prior to mid-1990, many of the recruitment efforts were handled by individual ICDs with the exception of a small central office handling the Clinical Associate/Research Associate Program, then called the Medical Staff Fellowship (MSF) Program. By the late 1980s, the decentralized recruitment efforts began to encounter difficulties. Applications for the MSF program began to fall precipitously, and the overall quality of applicants was said to decline, although no objective measures of quality were collected prior to 1990. Although no data are available, postdoctoral recruiting was reported to be in similar difficulty.

In mid-1990, the Office of Education was established with centralized responsibilities in the areas of recruitment, education, and training.

Between mid-1990 and 1992, OE implemented programs that were consonant with 1992 recommendations for centralized fellow recruiting provided by the OEO Report on the Staff Fellowship Program. These are summarized in **Appendix A.** In addition, the following efforts were initiated:

- At national meetings in the clinical and basic sciences, materials on intramural training are exhibited and disseminated. Materials are also exhibited and disseminated at scientific meetings targeting underrepresented minorities.

- To reach all clinical residents including women and minorities who may be interested in intramural training, a letter is mailed directly to all medical, surgical, and pediatric residents. The letter describes intramural clinical and research training opportunities. At present no database of graduate students exists that would permit the orchestration of a similar direct mail campaign in the basic sciences.

- Although support has been requested from the Director of NIH annually since 1990 for a special affairs officer to expand current efforts in the recruitment and postdoctoral training of minorities, none has been available. This recommendation of the 1992 OEO Report has not been implemented.

- New programs to attract women and minorities into science have been developed. These programs target students at the precollege and college levels as well as secondary science teachers in schools with enrollments that are composed predominantly of underrepresented minorities.

2. ICD-Specific Programs

A number of the ICDs reported that in 1992 they had undertaken postdoctoral recruitment efforts targeted at underrepresented minorities that are similar to the efforts described above. However, three ICDs have efforts of a different sort that deserve mention. Both NIDDK and NIA have provided slots for the hiring of minority postdoctoral scientists or physicians. NIDDK set aside three slots and NIA two slots for 1992 for that purpose. NIAID has established a liaison program with Howard University in which Howard fellows rotate on the clinical services and NIH faculty participate as attendees at Howard.

3. Analysis of Recruitment and Training Efforts at the Postdoctoral Level

Between January 1992 and July 1993, OE received 2,257 inquiries for clinical and research training from physicians and 1,048 inquiries for postdoctoral training in the basic sciences from graduate students or doctoral level scientists. An additional 2,117 accessions of the electronic listing of intramural postdoctoral positions were recorded in 1992 from persons around the globe. There are no similar data for comparison collected prior to establishment of OE.

In 1992, 138 investigators advertised 142 postdoctoral positions in the basic sciences through OE. Depending on the needs of the applicant, OE instructed applicants to apply either directly to the individual investigator or centrally to OE. Investigators receiving applications directly were asked to report to OE the number of applications received and whether or not the positions were filled. In 1992, 126 investigators or 91 percent of the total reported back to OE. From all sources a total of 2,410 applications were received—a ratio of better than 16 applications per position. At the time of reporting, 74 percent of positions had been filled. No similar data exist for comparison prior to establishment of OE. Since Federal policy formulated in a previous administration prohibited questions on race or ethnicity, no data exist on the ethnic distribution of the applicant pool. However, data are collected on the racial and ethnic distribution of fellows in appointed (FTE-encumbering) positions.

Similarly, more applications for clinical and research positions from physicians are directed to clinical program directors as well as to OE. Also, the new NIH listings of accredited programs within the Graduate Medical Education Directory refer applicants directly to the program directors. In 1992, a total of 1,096 applications were received by clinical program directors and by OE. Of the total, 983 applications were for clinical and research training, and 113 were for research training alone. This represents approximately 8.6 applications per clinical position. Over the last 3 years the application rate has increased markedly and the number of vacancies in the clinical training programs has fallen. (See **Appendix E**). In the basic sciences, the ratio of applications per position averages better than 16 to 1. (No data for comparison is available prior to establishment of the OE efforts in this arena.)

Is there any evidence that these overall increases in numbers have been associated with any increase in the numbers of applications from underrepresented minorities? **Figure 17** is a plot by year of the participation of underrepresented minorities among domestic fellows in selected appointed positions comparable to those examined in the current study.[6]

Figure 17 reveals a modest increase over the last 3 years in the participation of underrepresented minorities (U.S. citizens or permanent residents) in appointed positions. The participation of underrepresented minorities in intramural training programs by ICD is shown in **Figure 11**. Across all programs for U.S. citizens and permanent residents, Asians and Pacific Islanders comprise 12.1 percent and underrepresented minorities roughly half that number, 6.1 percent. The median participation of underrepresented minorities by ICD is 5.6 percent. Some of the differences among certain ICDs such as DCRT may reflect differences in the pool size of available candidates. For example, the pool of underrepresented minorities among doctoral recipients in mathematics and computer sciences is much smaller than the pool of scientists in the life sciences (*Summary Report 1991: Doctorate Recipients from United States Universities, National Research Council*).

An examination of the ethnic distribution of fellows by specific appointment mechanism is informative (**Figure 18**). Ignoring for the moment programs with less than 10 fellows, participation for underrepresented minorities ranges from a low of 3.13 percent (32 fellows) for the NCI Biotechnology Program to as high as 11.9 percent for research associates (42 fellows). Among components of the Visiting Program, i.e., visiting fellows, visiting associates, and visiting scientists, Asians and Pacific Islanders comprise the largest minority group and underrepresented minorities comprise between 4.2 percent and 4.9 percent of the fellows.

Examination of the larger programs (>40 fellows) reveals the greatest representation of underrepresented minorities in programs for M.D.s: clinical associates (11.3 percent), research associates (11.9 percent), and senior clinical investigators (10.0 percent). By comparison, participation of underrepresented minorities in nonclinical programs such as senior staff fellows (3.6 percent), IRTA fellows (4.9 percent), and staff fellows (6.1 percent) ranges from approximately one-third to half that of the M.D.-oriented programs.

The participation of underrepresented minorities in NIH postdoctoral programs roughly parallels but does not exceed the representation of underrepresented minorities within pools of students completing medical or graduate studies (**Figure 14**). Underrepresented minorities comprise 8.9 percent of graduates of U.S. and Canadian medical schools (American Medical Association, "Medical Education in the United States 1990-1991," August 1991, reprinted in AAMC Minority Students in Medical Education Facts and Figure VI, 1991) and 4.5 percent of postdoctoral fellows in the life sciences (Women and Minorities in Science and Engineering: An Update, January 1992-data from 1989). Similarly, among 513 NIH fellows (U.S. citizens and permanent residents) holding an M.D. or M.D./Ph.D.

or equivalent degree, underrepresented minorities comprise 10.1 percent (Blacks, 6.6 percent; Native Americans, 0.2 percent; and Hispanics, 3.3 percent). Among 940 fellows (U.S. citizens and permanent residents) holding a Ph.D. degree or equivalent, underrepresented minorities comprise 3.9 percent (Blacks, 2.5 percent and Hispanics, 1.4 percent). Asians and Pacific Islanders comprise 11.5 percent of M.D. and M.D./Ph.D.s and 12.8 percent of Ph.D.s. Thus, NIH is most successful in recruiting underrepresented minority physicians and less successful in recruiting Ph.D.s.

4. Conversion from a Training Position to a Tenured Position

The tradition within the intramural program has been to offer training to individuals, most of whom will seek permanent positions within the extramural academic community. Select trainees are asked to remain in the tenure track and if successful are converted to tenured investigators. Opportunities for permanent employment undoubtedly constitute a positive influence on recruitment. The newly approved NIH tenure track policies have been praised as much needed steps toward ensuring a more open and equitable process.

Members of groups traditionally under-represented in science have pointed to the lack of advancement among their members. Only in the last 2 years has the representation of women among the ranks of the newly tenured equaled or exceeded their representation in the pool of postdoctoral fellows extending back a decade. Recently, women advisors to each of the scientific directors have been appointed to offer counsel on issues that affect the advancement of women. Some of these advisors will also act as mentors for women.

The conversion experience for under-represented minorities over the last 5 years (1988-1992) was examined. The denominator for the analysis was the pool of fellows, converted to tenure in this interval, who were U.S. citizens or permanent residents, who had trained in the intramural program in any of a variety of appointed fellowship positions (not including experts), and who were formally approved by the Board of Scientific Directors. Direct hires and fellows approved for clinical tenure were not included. Of the 127 fellows approved for tenure by the Scientific Directors over the 5-year period (1988-1992), 85.0 percent were white, 9.4 percent were Asian/Pacific Islander, 3.2 percent were Hispanic, and 2.4 percent were Black. Since tenure may follow a 5- to 7-year tenure-track period, the pools of fellows 6 years prior to each of the years in the 1988-1992 period were examined as relevant to these conversions. Between 1982 and 1986, the representation of underrepresented minorities in the pool of NIH postdoctoral fellows averaged 4.6 percent. The percentage of under-represented minorities among those tenured in 1988-1992 (5.5 percent) exceeds the percentage of fellows in the pools in the period 1982-1986 6 years earlier (4.6 percent). In the last 3 years the proportion of underrepresented minorities among fellows (U.S. citizens and permanent residents) in appointed positions has increased to the highest levels in the last decade. If the percentage of under-represented minorities who become tenured

continues to reflect their representation in the fellowship pool, a proportionately increased number of minorities would be expected to be included among the newly tenured scientists.

D. Participation of Underrepresented Minorities in Intramural Programs at All Levels

Figure 14 summarizes the participation of underrepresented minorities in the NIH Intramural Internship Programs and compares this participation to the representation of minorities at various educational levels on a national basis.

Among high school students involved in NIH summer research internships, underrepresented minorities comprise 32 percent of the total participants. Although no recent data are available describing the representation of such students among high school students interested in science, the NSF did estimate in 1977 that under-represented minorities comprised 21 percent of high school sophomores and represented nearly 12 percent of students interested in science and engineering.

Twenty-two percent of undergraduates and nearly 25 percent of medical students participating in NIH summer research internships are underrepresented minorities. For comparison, underrepresented minorities comprise 15.5 percent of all undergraduates, 9.9 percent of all students receiving a bachelors in the life sciences, and 12.4 percent of first-year medical students.

At the postdoctoral level underrepresented minorities comprise 3.9 percent of NIH fellows with a Ph.D. or equivalent degree and 10.1 percent of those with an M.D., M.D./Ph.D., or equivalent degree. For comparison, 4.8 percent of postdoctoral fellows in life sciences and 8.9 percent of U.S. medical residents (graduates of U.S. and Canadian medical schools) are underrepresented minorities.

Among NIH tenured investigators, 2.2 percent are underrepresented minorities whereas 3.4 percent of the tenured faculty of all U.S. medical schools, including Howard, Meharry, Morehouse, the University of Puerto Rico, Ponce, and Caribe are so described (AAMC Faculty Roster) (**Figure 19**). By comparison medical schools at research universities ranked in the top 5 by NIH extramural awards (Group 1: Harvard; Johns Hopkins University; University of Washington, Seattle; University of California, San Francisco; and Yale University) or ranked 6th to 10th (Group 2: University of Michigan, Ann Arbor; University of California, Los Angeles; Columbia University; University of Pennsylvania; and Washington University, St. Louis) reported underrepresented minorities comprising 1.6 percent and 3.1 percent of tenured faculty, respectively (**Figure 19**). The numbers of faculty members totaled from all Group 1 medical schools (1,056) and from all Group 2 medical schools (1,531) were comparable to that of the intramural program (1,148).

E. Analysis

1. Student Programs—Considerations for the Long Term

The intramural program has been effective in engaging students at all educational

levels in scientific experiences. Indeed, the percentage participation of underrepresented minorities in research internships at NIH is approximately twice that anticipated from representation of these groups in nationwide pools at the college, medical school, and graduate school level.

Comparisons to pool sizes at various educational levels provide some gauge as to what might be anticipated if a program attracts minority students in proportion to the representation of those individuals at appropriate levels in the educational system. However, solace cannot be taken as long as the representation of minority groups among science professionals remains below the level of representation in the population as a whole. Indeed, it is on this basis that the groups are designated "underrepresented minorities." In this context, it is significant that the proportion of underrepresented minorities in the NIH student internship programs at the high school, college, and medical school levels equals or exceeds the representation in the general U.S. population. The same cannot be said of the NIH postdoctoral level programs.

At the postdoctoral level, the participation of underrepresented minorities with the M.D. degree mirrors the representation of these groups in the pool of medical residents. In the case of those holding the Ph.D. degree, the percentage falls slightly below the level in the comparable pool. Both are well below the proportion of minorities in the general population. Whenever comparisons such as these are made against an indicator of the true pool size, some caution should be taken. For example, in the case of M.D.s, the pool of minorities seeking research training is estimated from the pool of all medical residents; and it must be assumed in the absence of data to the contrary that all racial and ethnic groups are proportionately represented in the subset of residents who decide to pursue academic or research careers. Similarly, in comparisons to the pool size of doctoral recipients in the biological sciences it is assumed that all racial and ethnic groups are proportionately represented among those who decide to seek postdoctoral training.

Nonetheless, it is striking that the successful recruitment of minority students to NIH via the student programs has not led to an increased representation of minorities in the NIH postdoctoral pool above that observed in nationwide pools. Some of the student programs have been so recently implemented that participants have not advanced to levels compatible with postdoctoral training. For the programs that have been in place 5 or more years, long enough for participants to have moved into postdoctoral training, there is little to no longitudinal data available. It is true that students who first came to NIH as summer interns have returned to NIH for postdoctoral training; exactly how many over the years is unknown. It is also not known what proportion of these students entered academic careers, and of those entering research careers, where they sought postdoctoral training. Clearly, this is an area where more information is needed.

Tracking and followup of students is essential for transferring the success of increased minority participation in student programs to the postdoctoral level. In the

process, NIH might also better utilize some of the more successful student programs offering opportunities for such transfer.

2. Transferring the Success in Student Programs to the Postdoctoral Level

Student programs are an investment in the future. The value of these initiatives lies in the exposure young people receive to the process of scientific investigation and the rigors of scientific thinking. Attracting underrepresented minorities is critical in the development not only of future scientists but of a scientifically literate citizenry. These programs are a long-term national investment. Nevertheless, because stipends and other resources dedicated to these efforts are significant, NIH should consider how to make better use of these programs to augment recruitment of underrepresented minorities at the postdoctoral level. In that light, a number of the successful student programs are reviewed below. Also included is one program, the Clinical Electives Program, that does not now contribute to the effort to attract underrepresented minorities but has the potential to do so. The more advanced educational levels are considered first, where investments may most immediately affect the intramural postdoctoral pool.

For medical and dental students, OE's Summer Research Fellowship Program attracts 100 or more students (in their first or second years of professional school) annually to NIH for summer research experiences. Of this number, regularly 20-30 percent are members of under-represented minority groups—a percentage that compares favorably with their representation in the total U.S. population. Also, each year the Summer Research Fellows (as part of the program) are introduced to the Howard Hughes Medical Institute Research Scholars Program and encouraged to apply. Many do, and a number of the former research fellows return as HHMI research scholars each year. Some have returned to NIH during their residency as part of the NIH Resident Awards Program (a program that recognizes residents across the nation who have performed meritorious research). These residents are heavily recruited by subspecialty program directors at their training institutions. It is during the PGY1 (postgraduate year 1 or internship year) and early PGY2 years when the most competitive residents make decisions about future training.

In considering how to interest minority students in returning as clinical fellows, it must be remembered that when these students participated in summer research experiences on the NIH campus, they had virtually no contact with clinical services. Their project probably required no involvement with the clinical services or interactions with the clinical program directors. Decisions about the primary specialty areas they were to pursue would not be made until late in their third year or early in their fourth year of medical school. (This has been confirmed by OE followup of former HHMI Research Scholars in late winter and spring of their third year.) Clearly, during the period these students are on campus, clinical program directors can begin to discuss training options and can be available for guidance over the next 2 to 3 years. Followup in the third and fourth years is essential. Once a specialty area has been selected, support for students to

return in the fourth year for a clinical elective experience could be of great benefit. The students would be exposed first hand to the opportunities for combined clinical and research training at NIH, and clinical program directors would have the opportunity to work with them directly. Students could meet potential preceptors for their laboratory research during their fellowship training. A base would be set, before students enter their internship year, where program directors at their training institutions will recruit heavily.

Finally, this effort would be most effective if all institutes with clinical training programs participated in the Summer Research Fellowship Program. Currently, none of the divisions of NCI participate. As a consequence, relatively few medical students perform summer research internships at NCI.

A brief word should be included about the NIH Clinical Electives Program. This program offers third- and fourth-year medical students the opportunity to participate in 4- to 9-week clinical electives on the clinical services of the intramural program. There are 19 different electives, including such areas as endocrinology, hematology-oncology, immunology, medical genetics, medical or surgical neurology, nuclear medicine, and psychiatry. This program offers students a first-hand opportunity to explore the training experiences available to them at NIH upon completion of their primary residency training. Unfortunately, because of financial barriers, this opportunity is not equally accessible to all students. No housing or housing allowance is available to participants. Since most students will return to their home institutions after the NIH experience, they must simultaneously pay to maintain housing there as well. All travel subsidies were cut from the budget 2 years ago. None of these expenses is offset by any stipend or discount on meals of the sort provided by other institutions. Indeed, these financial outlays can pose a major disincentive to students who are marshalling all reserves to finance electives at institutions where they must apply for primary residency training. As a result, a major opportunity to attract students from all groups is lost. A particular disservice may be done to underrepresented minorities who shoulder, on average, a higher educational debt load which may result in much less financial flexibility.

On an ad hoc basis, similar experiences are available to medical and surgical residents; however, financial barriers also prove an obstacle to open involvement of residents there as well. In the case of residents the barriers are somewhat different, involving the need to maintain coverage at the home institution as well as the more personal financial issues.

Providing the financial support to overcome these barriers and to develop a prestigious program of clinical electives for medical students and residents may prove useful in attracting talented minorities to NIH for training.

With respect to programs for students at the college and high school levels, the NIH Summer Internship Program attracts most of the participants. This program is widely advertised, and recruitment efforts include institutions with predominantly minority enrollments. Working against the effective-

ness of this program is the perception by some students that personal connections are essential for obtaining an internship. Such perceptions may be particularly discouraging to members of groups who are traditionally underrepresented.

In an effort to provide greater opportunities for students outside of the local area, OE has implemented a system under which applications for summer positions are circulated to up to three institutes for review by investigators. However, since the hiring is done at the institute level, leadership from the Scientific Director is essential in opening the process and expanding opportunities. There are examples of successful programs in this regard. In NIAID, an annual workshop, Introduction to Biomedical Research, is organized to engage the interest of minority students (college, medical, and graduate students) in scientific careers and internships. As a followup, a number of the students who participated in the workshop are offered summer research internships. This model could be applied NIH-wide. NINDS and NIA also have effective outreach efforts for minority students, and these include similar workshops. Both NIAID and NINDS achieved levels of underrepresented minorities of approximately that in the general population without supplementation of students from the MARC program.

Also relevant in this regard are efforts designed to ensure an open application process. For example, in NICHD and NINDS a serious commitment is made to the summer program—resources are set aside for nearly 120 summer students. Applicants are evaluated on their credentials and on their potential to benefit from the internship experiences. With these procedures in place, underrepresented minorities participate in proportion to their representation in the pools of students at similar educational levels. Such an open process can be important in dispelling perceptions of favoritism that can discourage those in underrepresented groups. Achievement of higher levels of participation, in excess of that reflected by the representation in the pool, may require not only an open process but supplemental efforts as well. An examination of the initiatives employed by ICDs attracting the greatest participation is informative in this respect.

A number of institutes achieved levels of participation of underrepresented minorities in their summer programs that equaled or exceeded the representation of these groups in the U.S. population as a whole. With one exception, all of the most successful organizations relied significantly on the MARC Program, which channeled college students to NIH for summer internships. Only the Office of the Director with 81 students (40 percent underrepresented minorities) achieved those levels without MARC program involvement, and those particular efforts are discussed below. A number of institutes made considerable commitments to involving MARC students. NIDDK sponsored 22 MARC students out of a total program of 79 students. These 22 students represented 71 percent of the underrepresented minorities in the NIDDK program. In NCI, NHLBI, NIA, NIAMS, and NIDR, MARC students comprised 28 percent, 45 percent, 16 percent, 17 percent, and 60 percent, respectively, of all

underrepresented minorities in summer research internships in these organizations.

The MARC program, recognized for channeling underrepresented minorities into careers in biomedical research, is a tremendous resource for the intramural program. Underrepresented minority students at the college level who are interested in biomedical research can be readily identified. These students can participate in summer internship experiences that are part of an integrated effort to interest these students in research careers. Intramural efforts to follow these students into and through the MARC predoctoral programs may be fruitful. Certainly, the MARC predoctoral effort needs more consideration.

The MARC students involved in the summer programs are undergraduates. With followup, in the longer term these students can be encouraged to continue research training and to return to the intramural program. However, the possibility of more immediate return may lie in new investments in MARC predoctoral students. These students are obtaining Ph.D.s or M.D./Ph.D.s and may be less likely to seek student NIH intramural research experiences. By increasing coordination with NIGMS, which supports these students, and by providing some additional resources, MARC predoctoral students can be invited to participate in the NIH Research Festival. The opportunity could be taken to have these students meet a variety of investigators with whom they may wish to train at the postdoctoral level. In a similar manner, the Medical Scientist Training Program of NIGMS, which provides predoctoral support for M.D./Ph.D. students, could be used, although it does not specifically target underrepresented minorities. Mailing information about intramural training opportunities to students in these programs is not alone likely to increase their involvement in NIH programs since efforts at that level have already been tried by OE.

The OD programs include efforts of OE itself or OE in partnership with either the Howard Hughes Medical Institute or other OD offices including OEO, the Office of Research on Women's Health (ORWH), and the Office of Research on Minority Health (ORMH). These programs offer opportunities for women and minority high school and college students who would probably not have had internships without these efforts. For example, one woman who had just successfully completed the MARC Program at her undergraduate institution was not offered an NIH internship through the usual channels. This woman, as well as other talented underrepresented minority college students, was able to participate in summer research internships through the Undergraduate Research Scholars Program of OE and ORWH. Similar programs are available for students at the high school level. In one program, the result of a partnership of OEO, ORMH, and OE, 24 underrepresented minority high school students participated in intramural internships. In another OE program, students first received laboratory training in molecular biology during the academic year and then participated in an internship experience during the summer. For high school students, the training in molecular biology and the stipend support for the first summer

are often critical for obtaining a position for the student in an NIH laboratory. These programs provide a rich set of opportunities for underrepresented minorities, minorities, and women students and provide research experiences in virtually all institutes. Although many of these programs are new and only temporarily funded, already a number of students have become excited by their initial research experiences and have continued to participate—pursuing research summer after summer. The coordination of these efforts has permitted some students who have graduated from one program to be supported by another.

3. Summary and Analysis of Recruitment and Retention of Underrepresented Minority Scientists

The number of underrepresented minorities among the population of NIH tenured scientists is below that for the average of U.S. medical schools.[7] In comparisons with pools of top-ranked research universities, NIH is clearly not in a position of leadership. Furthermore, in the intramural pool of postdoctoral fellows, traditionally a major source for the development of intramural investigators, underrepresented minorities participate at a level that approximates or is slightly below that anticipated from nationwide pools.

The situation is in striking contrast to that for high school, college, and predoctoral students. It is also striking that where resources are expended across the institutes to attract and to provide stipends for underrepresented minority students, at the postdoctoral level very few resources are provided for the targeted recruitment and career development of fellows who are members of these groups. Indeed, the modest increases in the representation of these minorities in the intramural postdoctoral pool of domestic fellows are probably a result of the efficacy of the new broad-based recruitment initiatives that have opened up the process. If any lesson is to be taken from the student experience, achievement of higher levels of underrepresented minorities requires supplemental efforts beyond an opening of the process, albeit a necessary starting point.

Arguably some readjustment of priorities is in order to provide greater support at the postdoctoral level where the return in attracting underrepresented minorities into training and tenured positions is immediate. An argument for a readjustment of priorities is not to be misinterpreted as a call to diminish or discontinue efforts to engage students in experiences that foster interest in scientific careers. On the contrary, this may be an opportunity to streamline all of the student efforts, remove duplication across the ICDs, integrate the student programs into efforts to encourage underrepresented minorities to return for postdoctoral training, and provide resources specifically for the recruitment and career development of underrepresented minorities. However, it is critical that new resources be allotted to recognize the priority to be given to recruitment and career development issues at NIH for underrepresented minorities. Recruitment programs, in turn, should be fully integrated with efforts to enrich the training experience and level of satisfaction for minority scientists at NIH.

In the end, underrepresented minorities will find the intramural program attractive if and only if authentic long-term opportunities for advancement are provided. Minorities must see that they are advancing to tenure at least in proportion to their representation in the intramural pool of postdoctoral fellows as is true in the case of fellows who are U.S. citizens or permanent residents. Similarly, advancement into positions of scientific leadership must occur—as this is a critical indicator of the availability of long-term opportunities for underrepresented groups.

VI. RECOMMENDATIONS AND IMPLEMENTATION

The data presented in this report show significant underrepresentation of Blacks, Hispanics, and Native Americans in intramural NIH.[8] The committee recognizes the need to increase the representation of minority scientists in all phases of intramural NIH, including recruitment of student interns and postdoctoral scientists, and tenure of intramural investigators. This goal can be accomplished only by a campus-wide commitment to identify, recruit, and mentor talented minority scientists and to provide an environment that specifically encourages their development. From the comments of both minority and nonminority scientists interviewed by this committee, it is clear that many if not most nontenured scientists at NIH feel that the environment at NIH, while providing excellent technical and scientific support for research, leaves the postdoctoral researcher feeling isolated and often gives little personal encouragement. The tenure and tenure-track processes are poorly understood, and many talented people feel frustrated and discouraged by their experience at NIH. The problem is particularly acute for the small numbers of minority scientists on this campus. We strongly recommend the following changes in intramural NIH:

A. General Recommendations

The committee recommends that:

1. A full-time position be created for a director of Minority Science Faculty Development within the Office of Education of the Office of the Deputy Director for Intramural Research (DDIR). The incumbent would be responsible for reviewing, monitoring, and initiating efforts to recruit and retain minority scientists and would be specifically charged with overseeing the implementation of this report.

   The incumbent be assisted by the appointment of an Advisory Committee on Minority Science Faculty Development. The committee should be composed of tenured and nontenured minority scientists from the intramural research program (IRP), representatives of the Office of Equal Opportunity, NIH, ICD EEO Officers, the Board of Scientific Directors, the Medical Board, and the Division of Personnel Management.

2. Maintain data on the racial and ethnic origins of all intramural scientists through the NIH Division of Personnel Management, in

cooperation with the personnel offices of the individual institutes. All scientists should be asked to identify themselves with respect to race and national origin, and a yearly analysis should be conducted by institute and by employment mechanism to detail the number and percentage of minority scientists in each category.

3. Require each ICD Scientific Director to provide a yearly report to the Office of the DDIR on the ICD's efforts to increase participation of minorities in its intramural program.

4. Require each intramural site visit team to specifically address the representation of minority scientists in the unit under review and to evaluate programs and plans to increase representation, conversion to tenure, promotion, retention, and support for research for these scientists. The quality of mentorship in the laboratory or branch should be a necessary factor in the site visit evaluation. The site visit report should be provided to the Office of the DDIR.

5. Require all supervisors in IRP-NIH, as part of their yearly performance review under the EEO critical element, to document their efforts to increase the recruitment of minority scientists for open positions as well as document efforts to retain minority scientists in their area of responsibility. Efforts are to be documented in a detailed fashion.

6. Consider applicants for postdoctoral fellowship programs that encumber FTEs at NIH under the NIH FEORP policy.

7. Require annual training for all intramural scientists in areas concerning cultural diversity, race discrimination, attitudes and behaviors, prevention of sexual harassment, and mentoring.

8. Implement a program for loan forgiveness for underrepresented minority scientists in IRP, NIH, consistent with the 1993 legislative reauthorization of NIH.

B. Recruitment

Establish a position for Recruitment of Minority Scientists in the Office of Education, NIH. This office is to take responsibility for establishing new programs and amending existing programs to increase recruitment of minorities to internship programs, to predoctoral and postdoctoral research positions, and to tenured faculty positions NIH-wide.

Among these activities include programs to:

1. Maintain a database on all underrepresented minority students and postdoctoral scientists who work at NIH to track their career progress.

2. Develop a mailing list/database of minority predoctoral and postdoctoral scientists nationwide and regularly provide them with information on positions available at NIH.

3. Establish a network for underrepresented minority scientists on the NIH campus as a forum for increasing support and communication for nontenured scientists.

4. Develop and implement a program, with designated funding, to foster faculty exchange and recruitment of students for internships from historically Black colleges and universities, from predominantly Hispanic colleges and universities, and from institutions that have significant numbers of Native American students.

5. Develop programs for improving the mentoring of postdoctoral scientists in IRP-NIH.

In addition, encourage and recruit scientists from African countries to participate in the Fogarty Visiting Program.

In considering alternatives for new recruitment efforts, the Office of Education should be given adequate resources to implement NIH-wide those existing programs (particularly those targeted to summer internships and early postdoctoral training) that have successfully recruited minority scientists to selected NIH institutes.

C. Retention and Promotion

The ICDs should:

1. Advertise and compete all tenure-track positions under FEORP guidelines.

2. Ensure representation of underrepresented minorities on promotion and tenure review panels, site visit teams, and boards of scientific counselors.

3. Provide orientation to all postdoctoral fellows regarding NIH tenure-track policies and tenure processes at the time they enter IRP-NIH.

4. Ensure the participation of underrepresented minorities as speakers and participants in scientific programs organized and/or sponsored by the ICD.

D. Additional Concerns

1. The health problems of minorities should be addressed by IRP-NIH. The ICDs should be committed to ensuring proportional representation of minority patients in the clinical programs of NIH. The committee strongly encourages the Office of Research on Minority Health to involve intramural scientists in the planning of regular NIH conferences on minority health. NIH should organize an initial national conference addressing the problem of underrepresentation of minority scientists in biomedical research.

2. The particular problems experienced by minority women scientists should be addressed by both the women's and minority committees.

NOTES

1. "Although Blacks constitute 12 percent of the total population and 11 percent of the total work force, they constitute only 3 percent of all scientists and engineers employed in the United States.... Although Hispanics constitute 8 percent of the total population and 5 percent of the total work force, they constitute only 2 percent of all scientists and engineers employed in the United States." Patricia E. White, Ph.D., National Science Foundation. *Women and Minorities in Science and Engineering: An Update.* (January 1992) p. xi.

2. Office of Equal Opportunity, NIH. *Report to the National Institutes of Health on Recruitment, Selection, Promotion, Retention, and Conversion of the Staff Fellowship Program* (April 1992), p. ii.

3. Office of Equal Opportunity, NIH. *Report to the National Institutes of Health on Recruitment, Selection, Promotion, Retention, and Conversion of the Staff Fellowship Program* (April 1992), p. i.

4. For U.S. citizens, the underrepresentation is true for both Hispanic and Black males (Figure 6) as well as females (Figure 7), and for both training (non-FTE) positions (Figure 9) as well as positions of employment (FTE) (Figure 8). Also, the percentages of Blacks and Hispanics among male fellows are comparable to those observed in the population of female fellows.

5. In recent years the summer program has been expanded to include the Summer Seminar Series for Students and Teachers, a career workshop entitled "How to Become a Member of the Next Generation of Biomedical Scientists," a guidance workshop entitled "Strategies for Success for Future Scientists," which included examination of ethnic- and gender-based issues, a workshop sponsored by NINDS called "Preparing for Medical School," and NIH Poster Day.

6. For purposes of this analysis only, senior clinical investigators were not included, since that position can be held by tenured investigators as well as nontenured fellows. Inclusion would require a separate analysis by year of the tenure status of each person holding that billet. The numbers of senior clinical investigators are relatively small compared with the total population of appointed domestic fellows (50 out of more than 1,100 in 1992).

7. Among NIH tenured investigators, 2.2 percent are underrepresented minorities whereas 3.4 percent of the tenured faculty of all U.S. medical schools, including Howard, Meharry, Morehouse, the University of Puerto Rico, Ponce, and Caribe are so described (AAMC data reference) (Figure 13). By comparison, medical schools that ranked in the top 5 on the basis of NIH extramural awards (Group I: Harvard; Johns Hopkins University; University of Washington, Seattle; University of California, San Francisco;

and Yale University) had 1.6 percent underrepresented minorities among their tenured facilities while those ranked 6th to 10th (Group 2: University of Michigan, Ann Arbor; University of California, Los Angeles; Columbia University; University of Pennsylvania; and Washington University, St. Louis) reported that underrepresented minorities comprised 3.1 percent of tenured faculty (Figure 19). The numbers of faculty members totaled from all Group 1 medical schools (1,056) and from all Group 2 medical schools (1,531) were comparable to that of the intramural program (1,148).

8. Hereafter in the recommendations "minority scientist" will refer to underrepresented minority scientists (Black, Hispanic, and Native American).

Tables/Figures

Employment Mechanisms for Nontenured Scientists, NIH

Position		Required Degree	U.S. Citizen or Permanent Resident	Maximum Years Prior Relevant Research Experience	Maximum Duration of Appointment (years)	Number of NIH Scientists*	Number of Underrepresented Minorities*
Non-FTE Positions:							
NCI Biotechnology Training Appointment Program		MD/PhD	Yes	5	5	32	1
NCI Cancer Epidemiology and Biostatistics Training Program		MD/PhD	Yes	5	5	8	1
NCI Cancer Prevention Training		MD/PhD	Yes	N/A	3	14	1
NCI General Fellowship Program		MD/PhD	Yes**	N/A	3	20	0
The NIH Intramural Research Training Award		MD/PhD	Yes	5	5	326	16
Visiting Fellowship		MD/PhD	No	5	5	872	37
FTE Positions:							
US PHS Appoint-ments	Clinical Associate/ Senior Clinical Investigator	MD	Yes	2-3	7	290	33
	Research Associate	MD	Yes	2-3	7	42	5
Civil Service Appointments	Epidemiology Staff Fellow	MD/PhD	Yes	At least 1	3	2	1
	Staff Fellow	MD/PhD	Yes	3	7	264	16
	Senior Staff Fellow	MD/PhD	Yes	7	7	521	19
	Visiting Associate	MD/PhD	No	At least 3	7	573	26
	Visiting Scientist	MD/PhD	No	At least 6	7	236	9

705 DCT Employment Chart

Numbers of scientists provided by NIH Office of Education

*As of October 1, 1992
**Includes foreign citizens

TABLE 1

RACIAL AND ETHNIC DISTRIBUTION OF NIH TENURED INVESTIGATORS AND SCIENTIFIC LEADERSHIP

TENURED SCIENTISTS	BLACK	% BLACK	HISPANIC	% HISPANIC	ASIAN/PI	% ASIAN/PI	WHITE	% WHITE	TOTAL	TOTAL %
LAB & BRANCH CHIEFS	1	0.44%	2	0.89%	4	1.78%	218	96.89%	225	100.00%
SECTION CHIEFS	1	0.27%	6	1.64%	22	6.01%	337	92.08%	366	100.00%
INVESTIGATORS	6	1.08%	9	1.62%	56	10.05%	486	87.25%	557	100.00%
TOTAL	8	0.70%	17	1.48%	82	7.14%	1041	90.68%	1148	100.00%

LEADERSHIP	BLACK	% BLACK	HISPANIC	% HISPANIC	ASIAN/PI	% ASIAN/PI	WHITE	% WHITE	TOTAL	TOTAL %
INSTITUTE DIRECTOR	1	4.00%	0	0.00%	0	0.00%	24	96.00%	25	100.00%
SCIENTIFIC DIRECTOR	0	0.00%	0	0.00%	0	0.00%	25	100.00%	25	100.00%
CLINICAL DIRECTOR	0	0.00%	1	7.14%	0	0.00%	13	92.86%	14	100.00%
TOTAL	1	1.56%	1	1.56%	0	0.00%	62	96.88%	64	100.00%

Note: No tenured investigator has self-identified as American Indian or Alaskan Native.

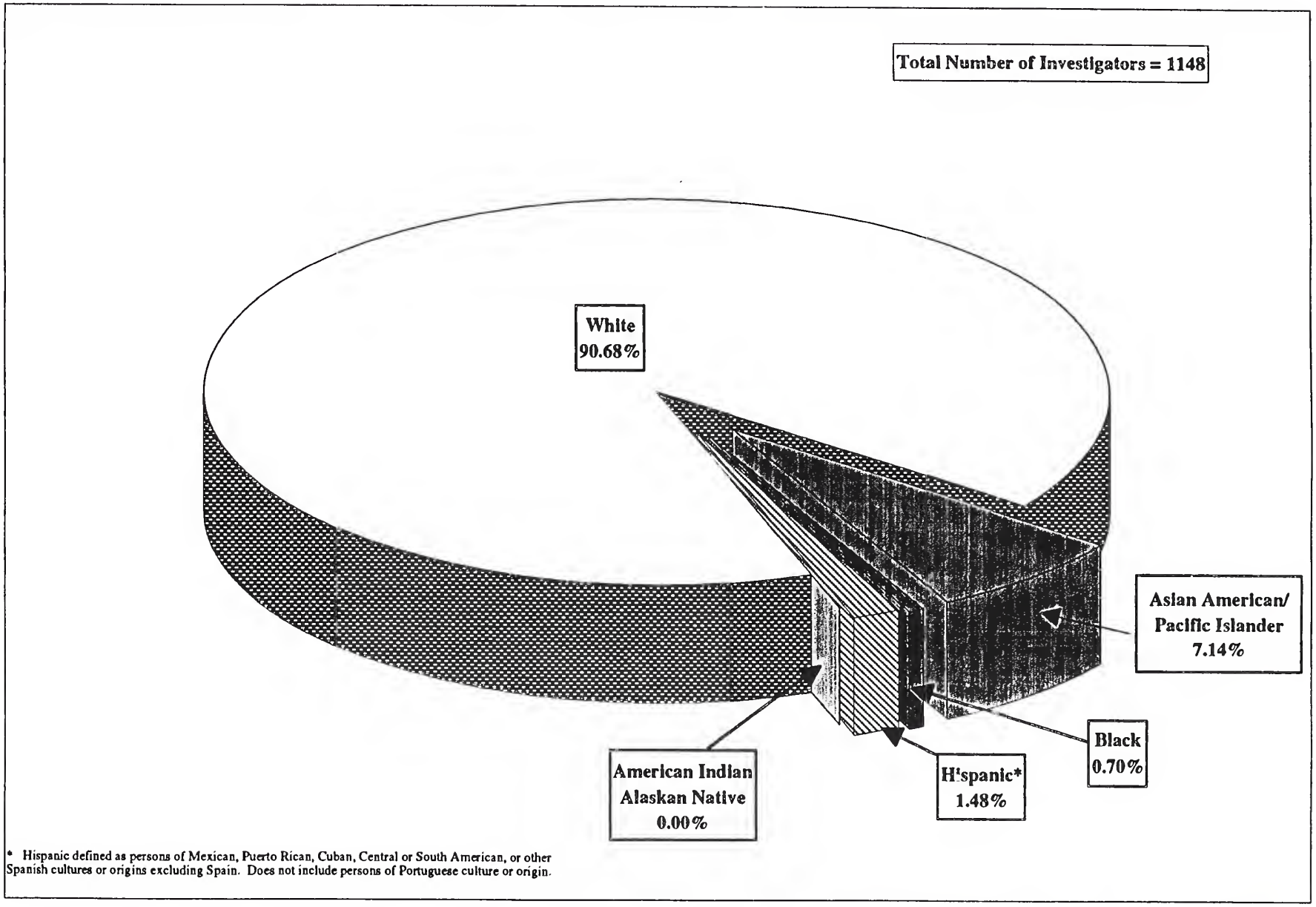
RACIAL AND ETHNIC DISTRIBUTION OF NIH FELLOWS

FELLOWS	BLACK	% BLACK	HISPANIC	% HISPANIC	AM-IND ALASKAN NATIVE	% AM-IND ALASKAN NATIVE	ASIAN PACIFIC ISLANDER	% ASIAN PACIFIC ISLANDER	WHITE	% WHITE	NOT IDENTIFIED	% NOT IDENTIFIED	TOTAL
U.S. CITIZENS													
FTE POSITIONS	53	4.74%	20	1.79%	1	0.09%	140	12.51%	905	80.88%	0	0.00%	1119
NON-FTE POSITIONS	9	2.25%	10	2.50%	0	0.00%	44	11.00%	335	83.75%	2	0.50%	400
TOTAL U.S. CITIZENS	62	4.08%	30	1.97%	1	0.07%	184	12.11%	1240	81.63%	2	0.13%	1519
FOREIGN CITIZENS	19	1.13%	53	3.15%	0	0.00%	679	40.39%	872	51.87%	58	3.45%	1681
GRAND TOTAL	81	2.53%	83	2.59%	1	0.03%	863	26.97%	2112	66.00%	60	1.88%	3200

TABLE 3

NIH OFFICE OF EDUCATION

ETHNIC DISTRIBUTION OF NIH TENURED INVESTIGATORS
(1992)



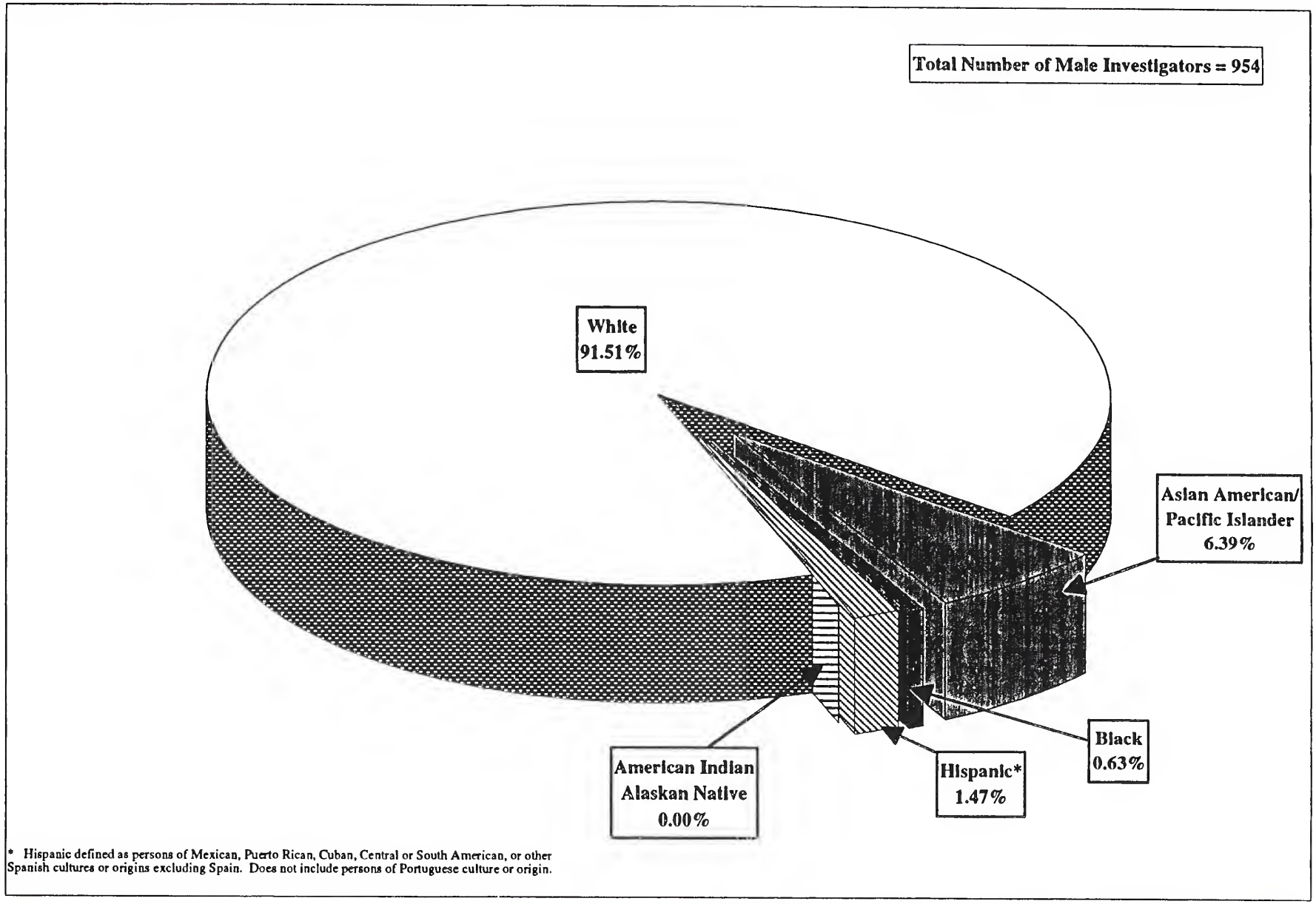
* Hispanic defined as persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish cultures or origins excluding Spain. Does not include persons of Portuguese culture or origin.

f01-all minority tenure
12/6/93
3:14 PM

FIG. 1

NIH OFFICE OF EDUCATION

ETHNIC DISTRIBUTION OF NIH TENURED MALE INVESTIGATORS
(1992)

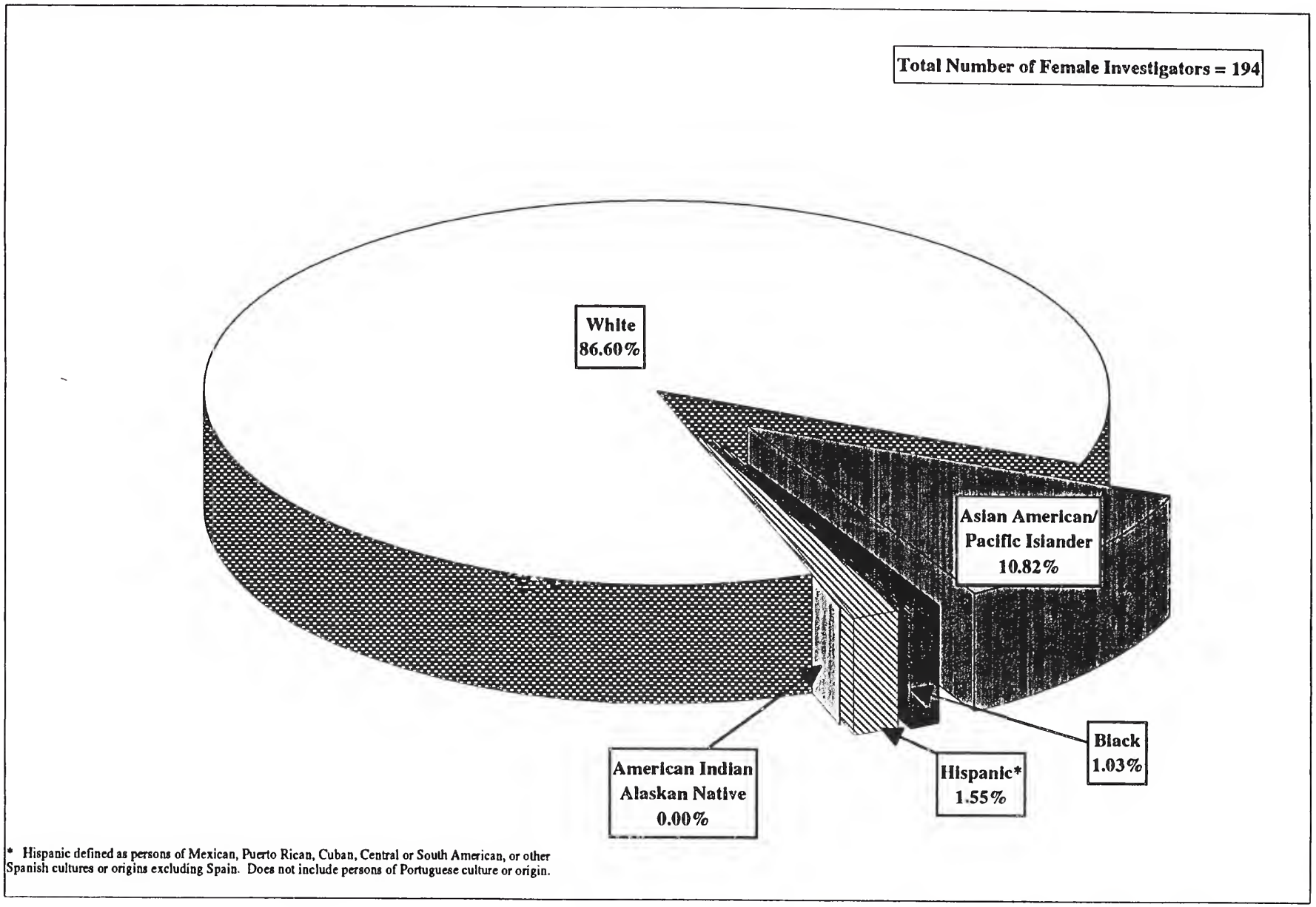


f02-male minority tenure
12/6/93
3:14 PM

FIG. 2

NIH OFFICE OF EDUCATION

ETHNIC DISTRIBUTION OF NIH TENURED FEMALE INVESTIGATORS
(1992)



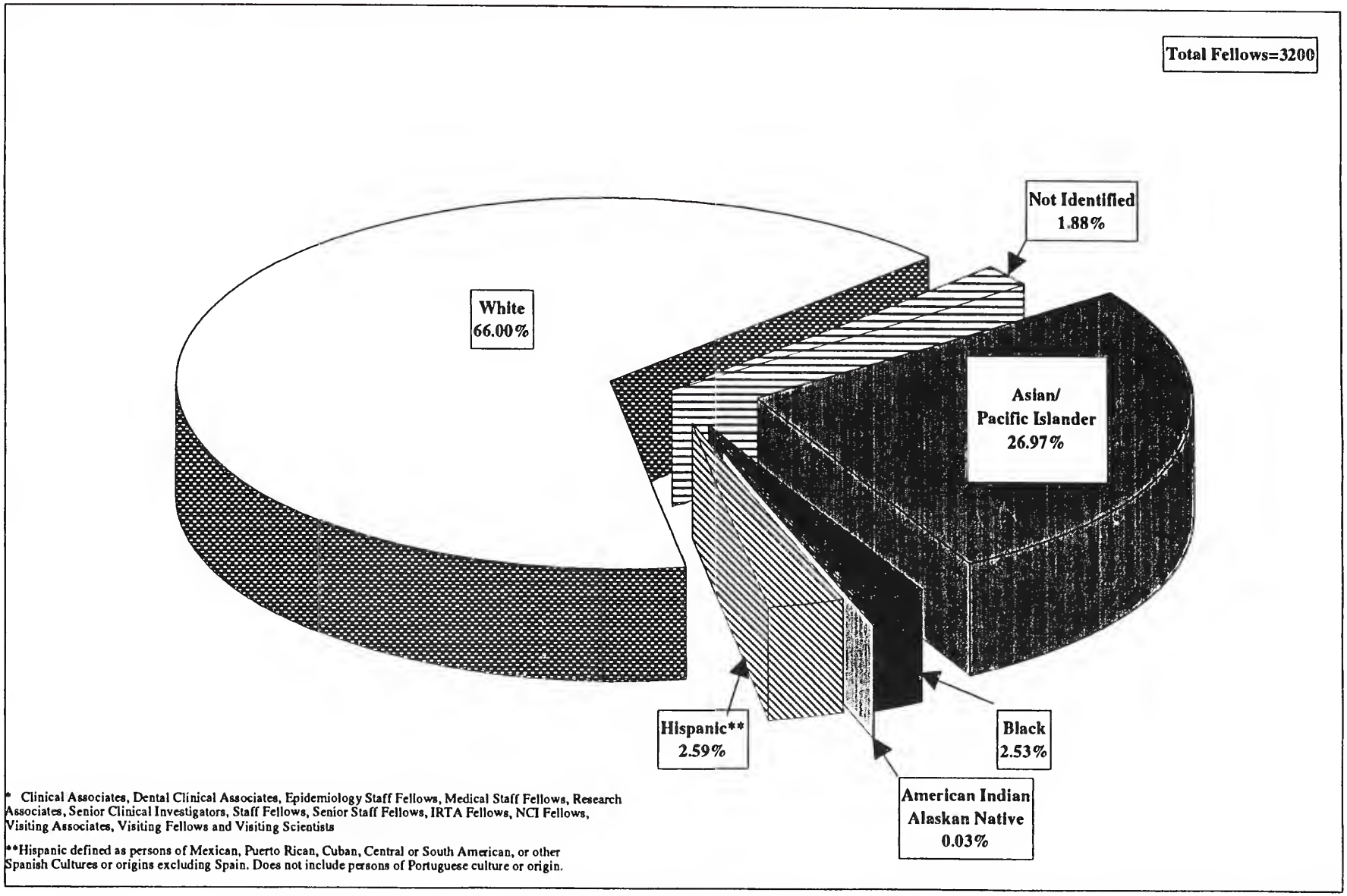
* Hispanic defined as persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish cultures or origins excluding Spain. Does not include persons of Portuguese culture or origin.

f03-female minority tenure
12/6/93
3:15 PM

FIG. 3

NIH OFFICE OF EDUCATION

ETHNIC DISTRIBUTION OF NIH FELLOWS*
(1992)



* Clinical Associates, Dental Clinical Associates, Epidemiology Staff Fellows, Medical Staff Fellows, Research Associates, Senior Clinical Investigators, Staff Fellows, Senior Staff Fellows, IRTA Fellows, NCI Fellows, Visiting Associates, Visiting Fellows and Visiting Scientists

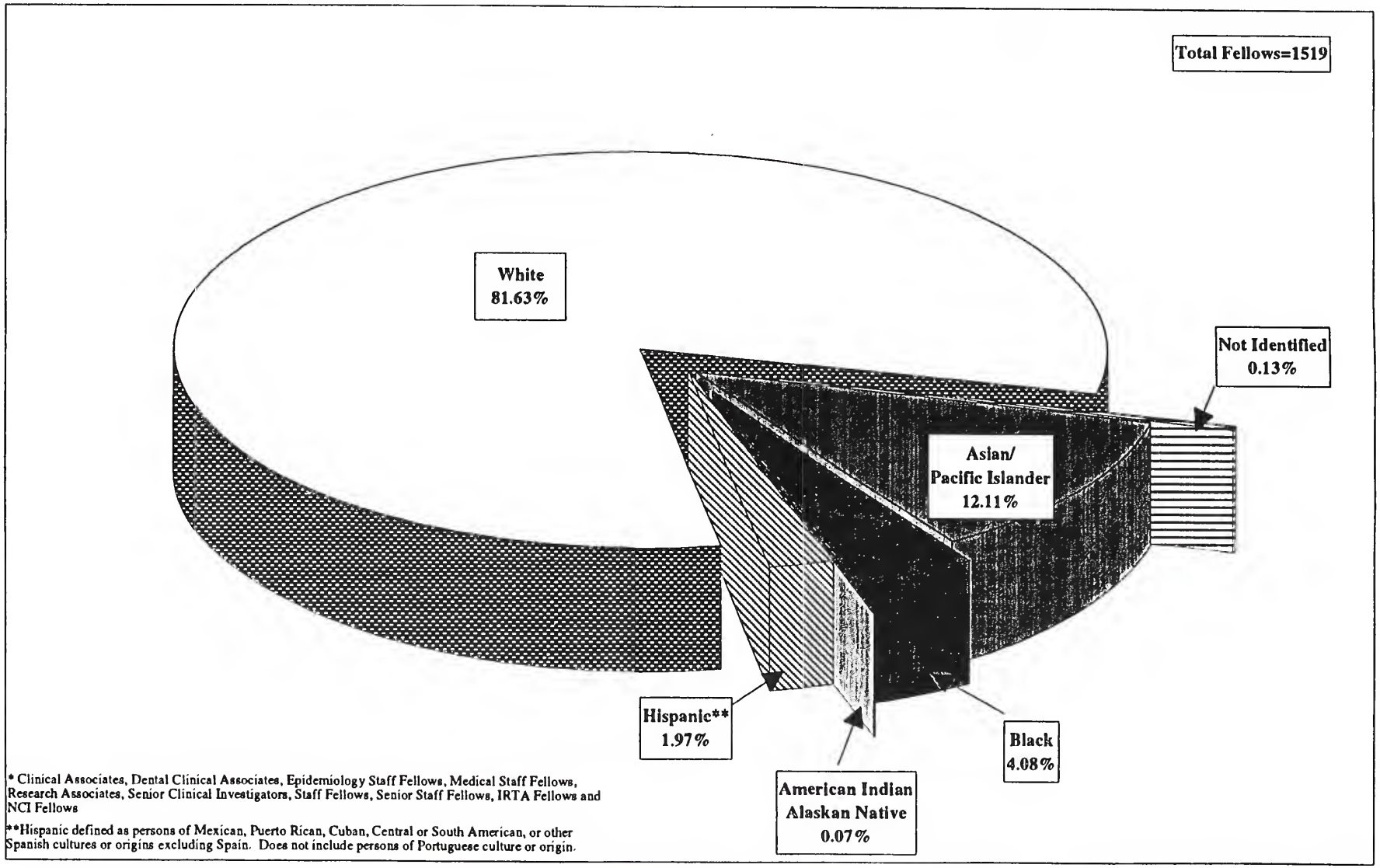
**Hispanic defined as persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish Cultures or origins excluding Spain. Does not include persons of Portuguese culture or origin.

f04-all fellows
12/6/93
3:15 PM

FIG. 4

NIH OFFICE OF EDUCATION

ETHNIC DISTRIBUTION OF NIH FELLOWS*
WHO ARE U.S. CITIZENS OR PERMANENT RESIDENTS
(INCLUDES FTE AND NON-FTE POSITIONS)
(1992)



* Clinical Associates, Dental Clinical Associates, Epidemiology Staff Fellows, Medical Staff Fellows, Research Associates, Senior Clinical Investigators, Staff Fellows, Senior Staff Fellows, IRTA Fellows and NCI Fellows

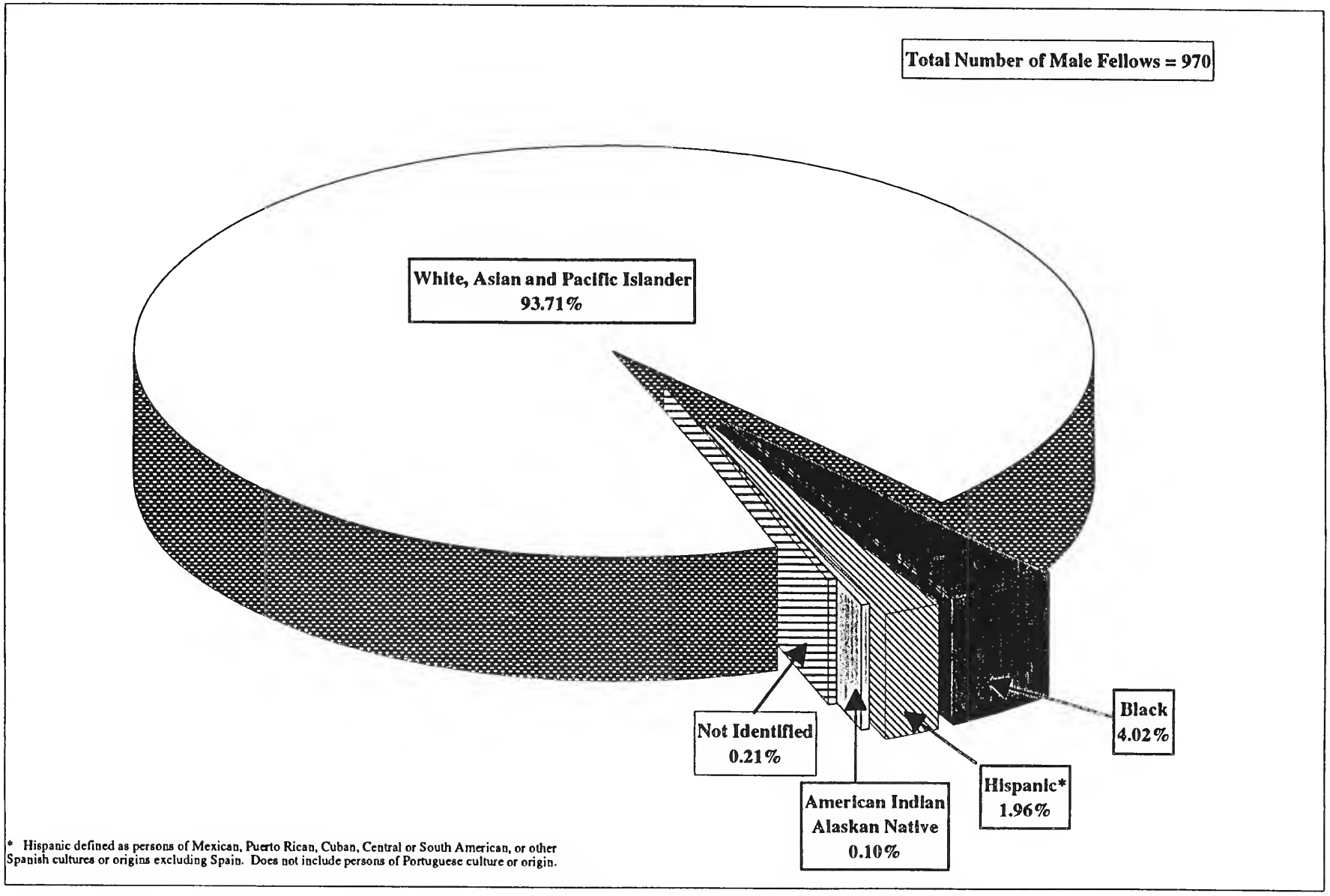
**Hispanic defined as persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish cultures or origins excluding Spain. Does not include persons of Portuguese culture or origin.

f05-domestic fellows
12/6/93
3:15 PM

FIG. 5

NIH OFFICE OF EDUCATION

ETHNIC DISTRIBUTION OF MALE NIH FELLOWS WHO ARE U.S. CITIZENS OR PERMANENT RESIDENTS
(INCLUDES FTE AND NON-FTE POSITIONS)
(1992)

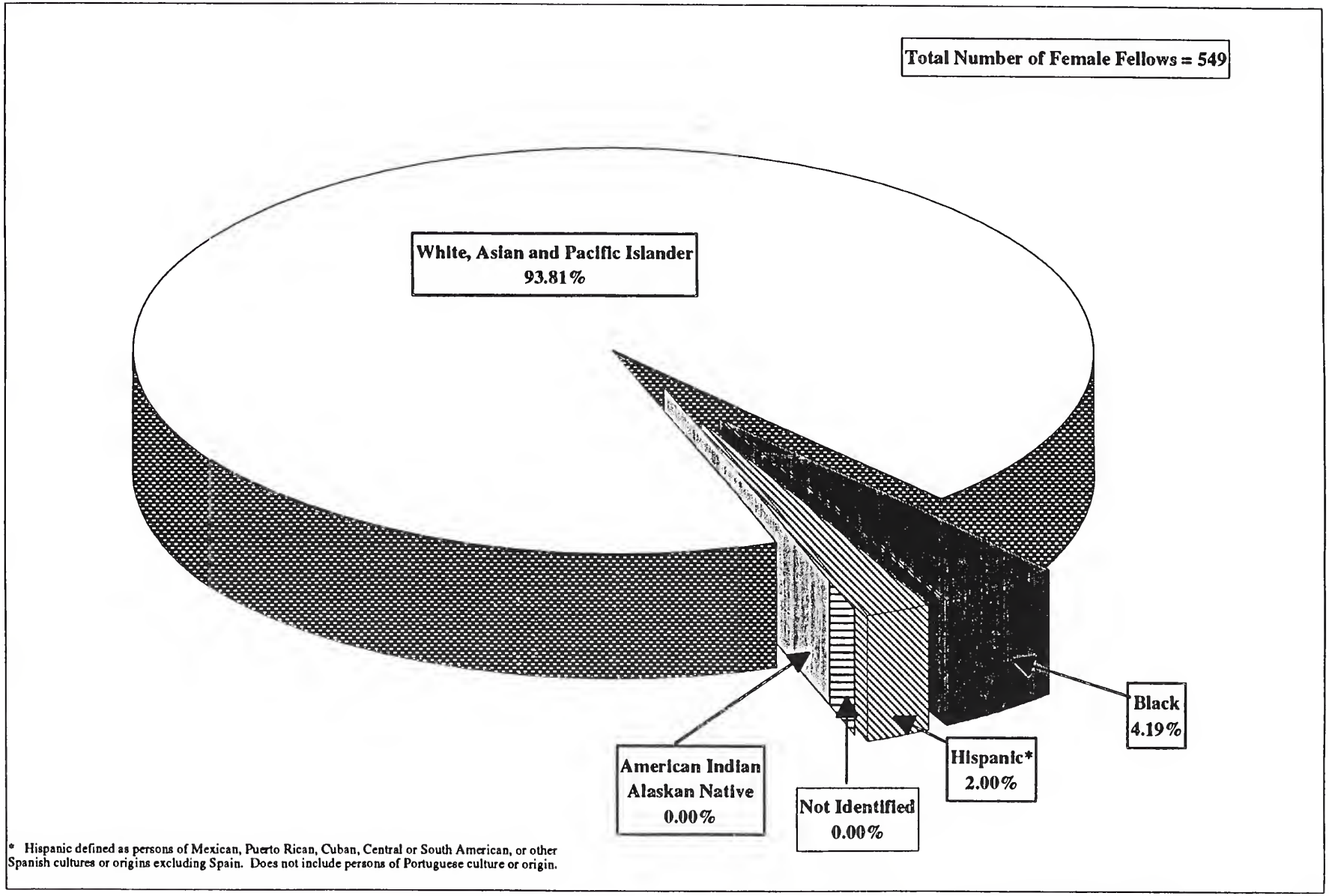

Total Number of Male Fellows = 970
White, Asian and Pacific Islander
93.71%
Black
4.02%
Hispanic*
1.96%
American Indian
Alaskan Native
0.10%
Not Identified
0.21%
* Hispanic defined as persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish cultures or origins excluding Spain. Does not include persons of Portuguese culture or origin.

f06-minority male fellows
12/6/93
3:15 PM

FIG. 6

NIH OFFICE OF EDUCATION

ETHNIC DISTRIBUTION OF FEMALE NIH FELLOWS WHO ARE U.S. CITIZENS OR PERMANENT RESIDENTS
(INCLUDES FTE AND NON-FTE POSITIONS)
(1992)

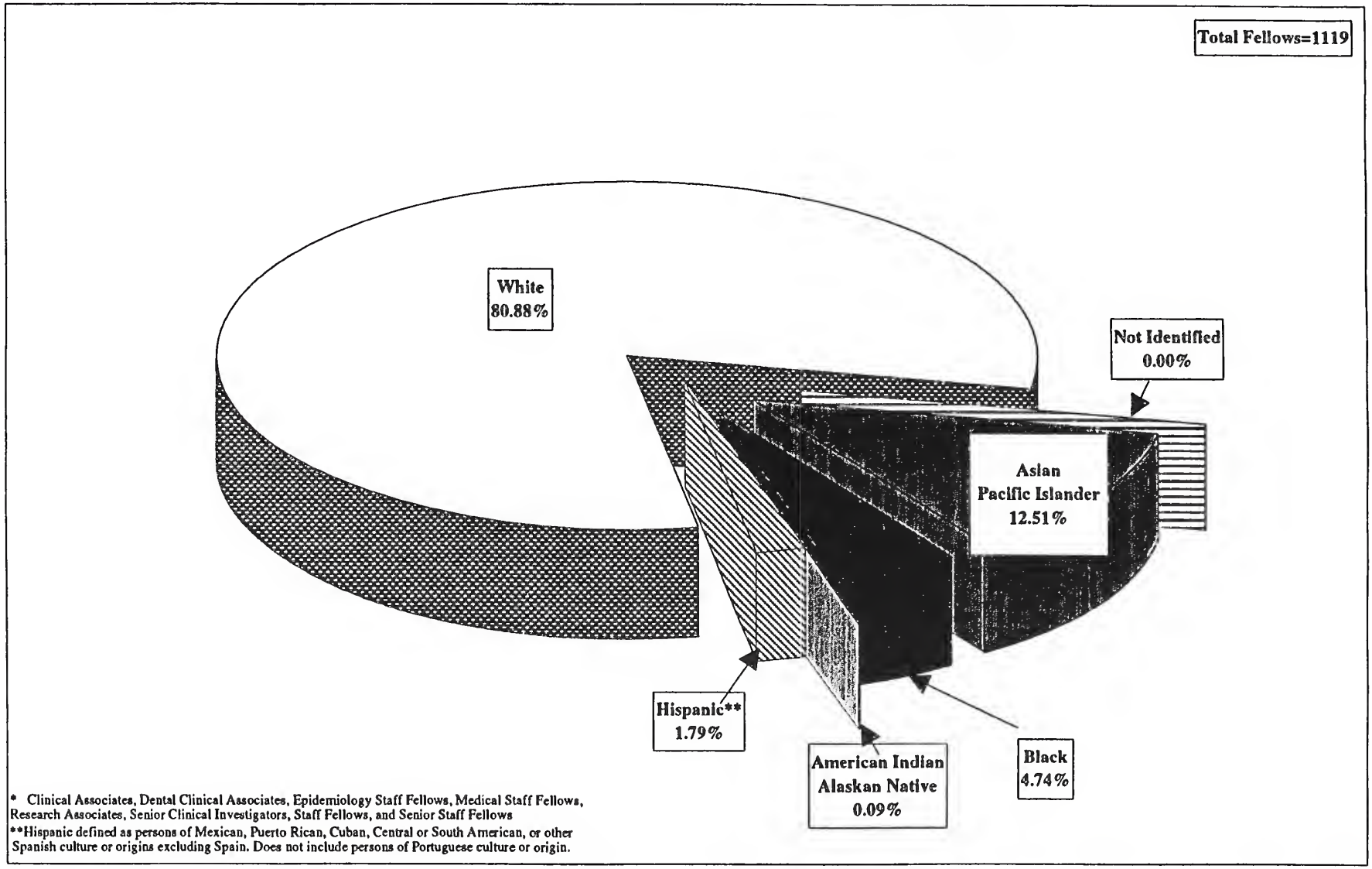

Total Number of Female Fellows = 549
White, Asian and Pacific Islander
93.81%
Black
4.19%
Hispanic*
2.00%
Not Identified
0.00%
American Indian
Alaskan Native
0.00%
* Hispanic defined as persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish cultures or origins excluding Spain. Does not include persons of Portuguese culture or origin.

f07-minority female fellows
12/6/93
3:15 PM

FIG. 7

NIH OFFICE OF EDUCATION

ETHNIC DISTRIBUTION OF NIH FELLOWS*
WHO ARE U.S. CITIZENS OR PERMANENT RESIDENTS
(FTE ONLY)
(1992)



* Clinical Associates, Dental Clinical Associates, Epidemiology Staff Fellows, Medical Staff Fellows, Research Associates, Senior Clinical Investigators, Staff Fellows, and Senior Staff Fellows

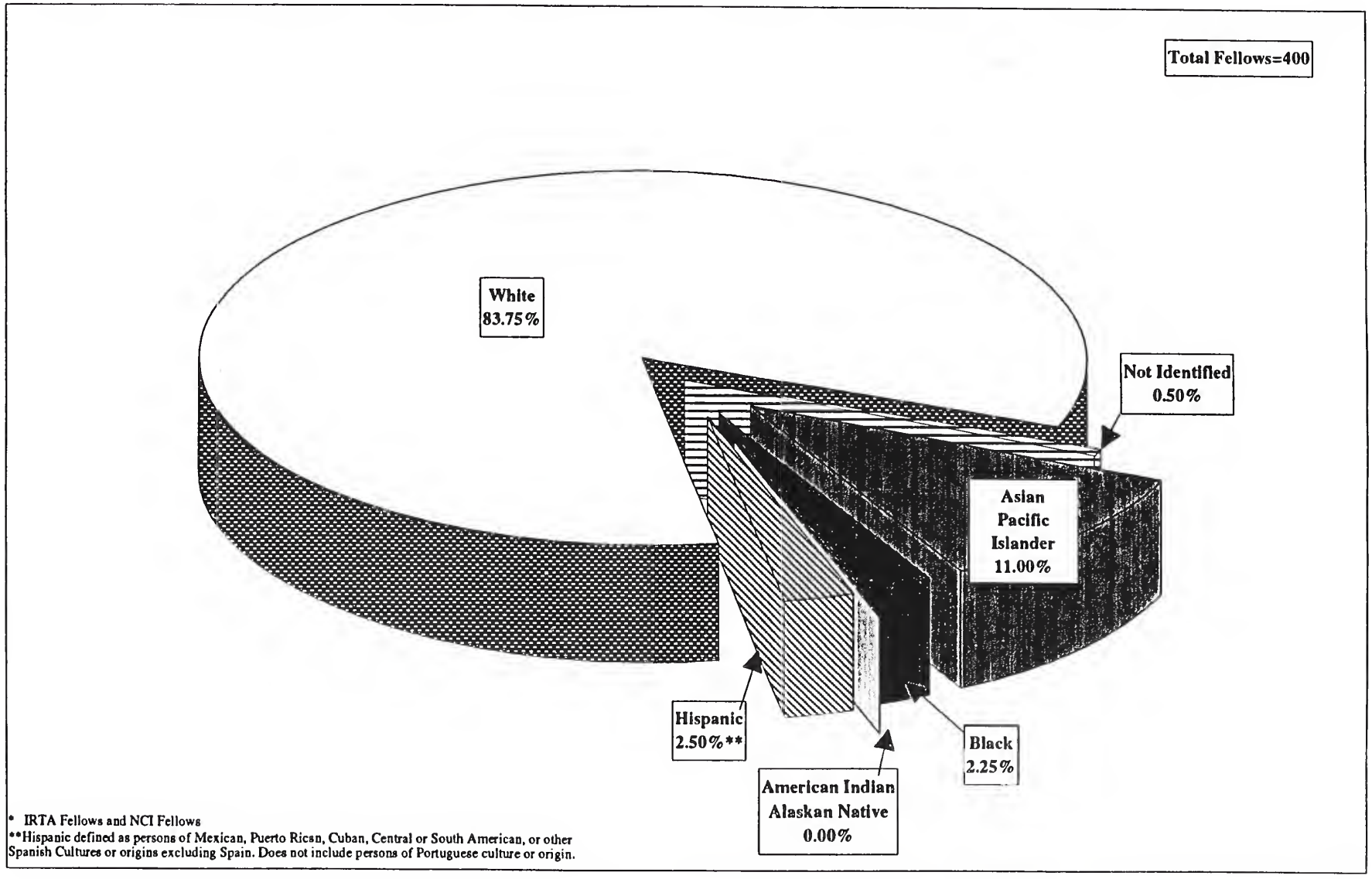
**Hispanic defined as persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origins excluding Spain. Does not include persons of Portuguese culture or origin.

f08-FTE fellows
12/6/93
3:15 PM

FIG. 8

NIH OFFICE OF EDUCATION

ETHNIC DISTRIBUTION OF NIH FELLOWS*
WHO ARE U.S. CITIZENS OR PERMANENT RESIDENTS
(NON-FTE ONLY)
(1992)



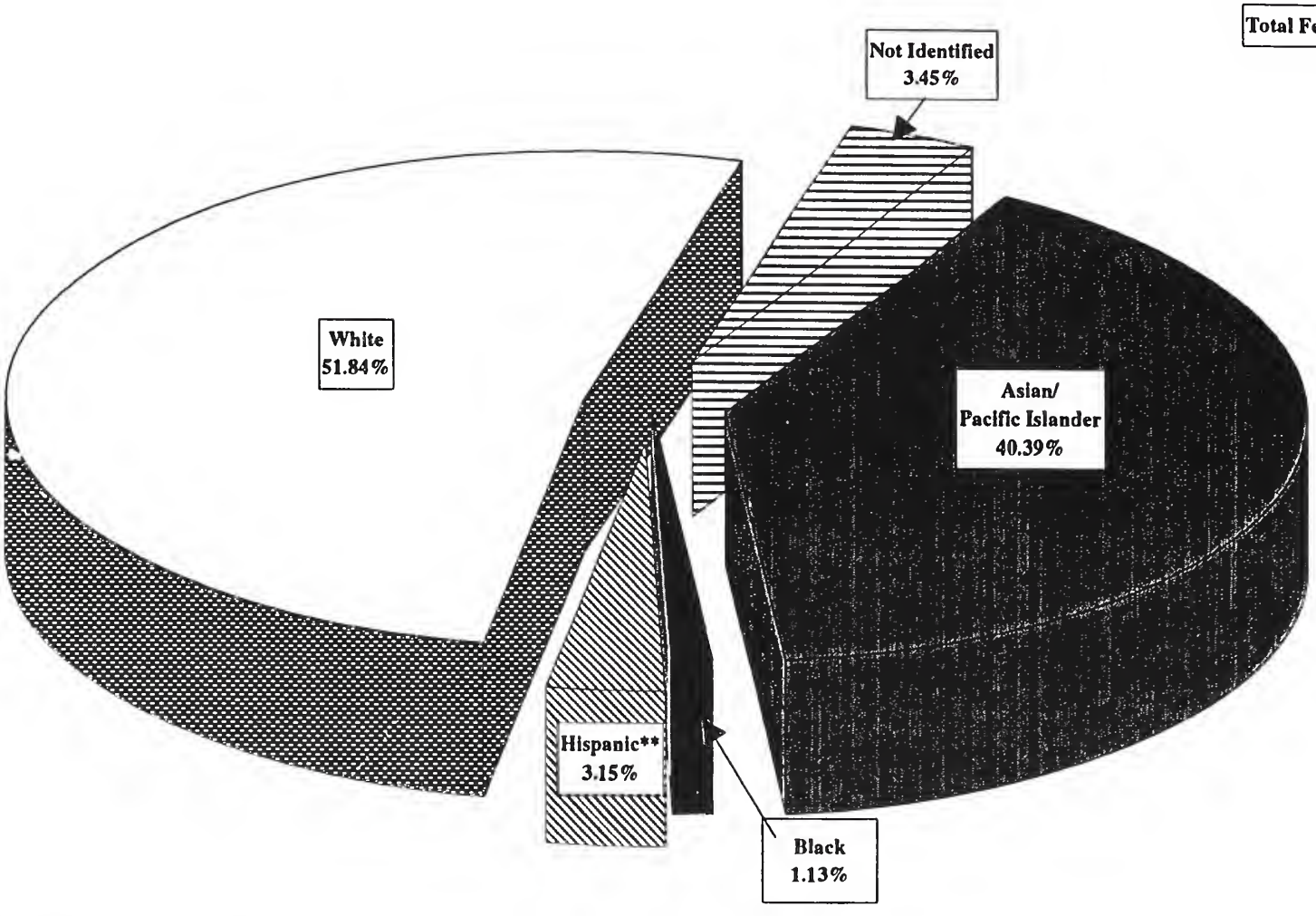
* IRTA Fellows and NCI Fellows
**Hispanic defined as persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish Cultures or origins excluding Spain. Does not include persons of Portuguese culture or origin.

f09-non-FTE fellows
12/6/93
3:16 PM

FIG. 9

NIH OFFICE OF EDUCATION

ETHNIC DISTRIBUTION OF NIH FELLOWS*
WHO ARE NOT U.S. CITIZENS OR PERMANENT RESIDENTS
(1992)



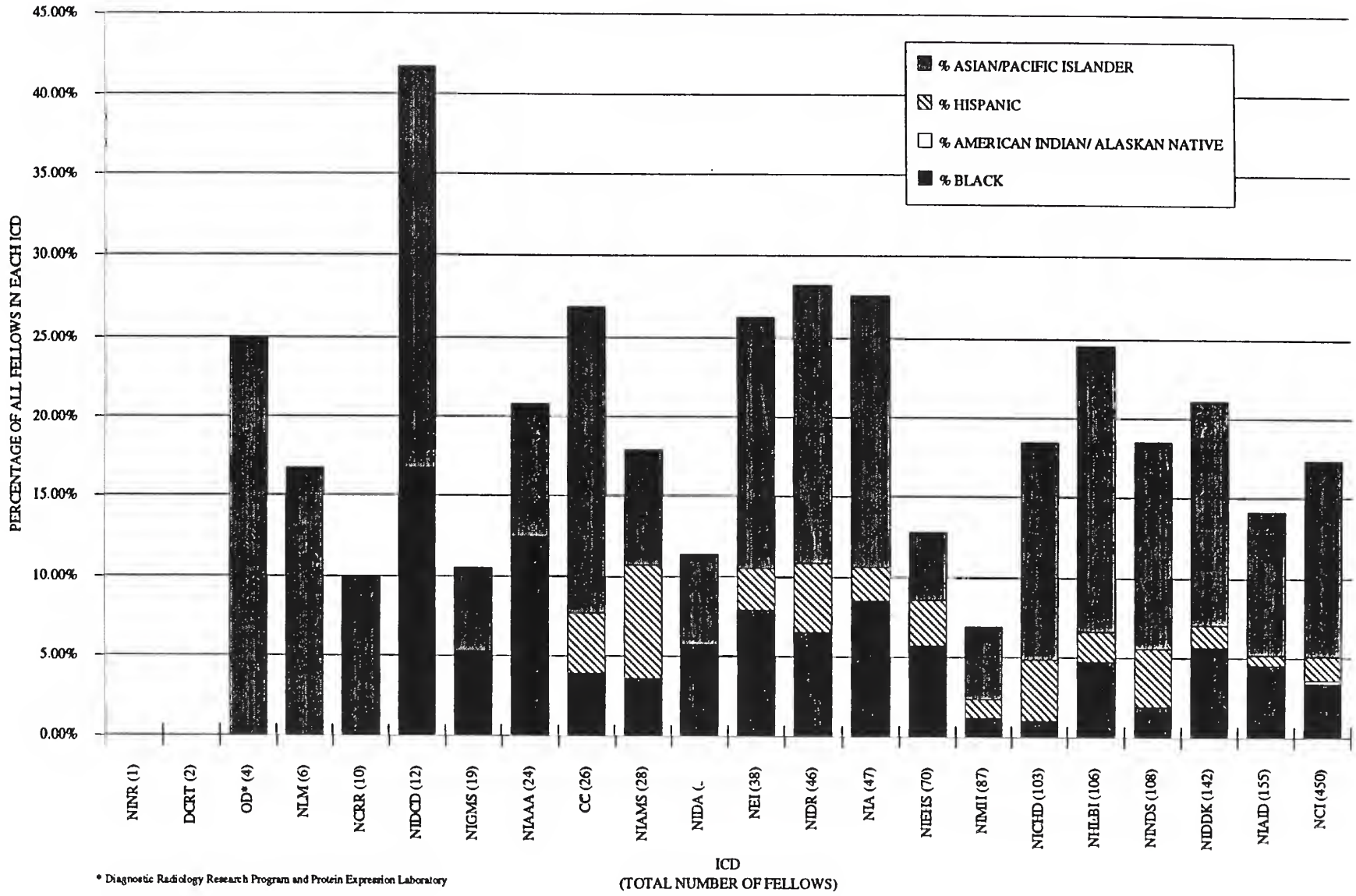
* Visiting Associates, Visiting Fellows and Visiting Scientists
**Hispanic defined as persons of Mexican, Puerto Rican, Cuban, Central or South American or other spanish cultures or origins excluding Spain. Does not include persons of Portuguese culture or origin.

f10-foreign fellows
12/6/93
3:16 PM

FIG. 10

NIH OFFICE OF EDUCATION

DISTRIBUTION OF ALL MINORITY NIH FELLOWS
(U.S. CITIZENS OR PERMANENT RESIDENTS)
BY ICD
(1992)



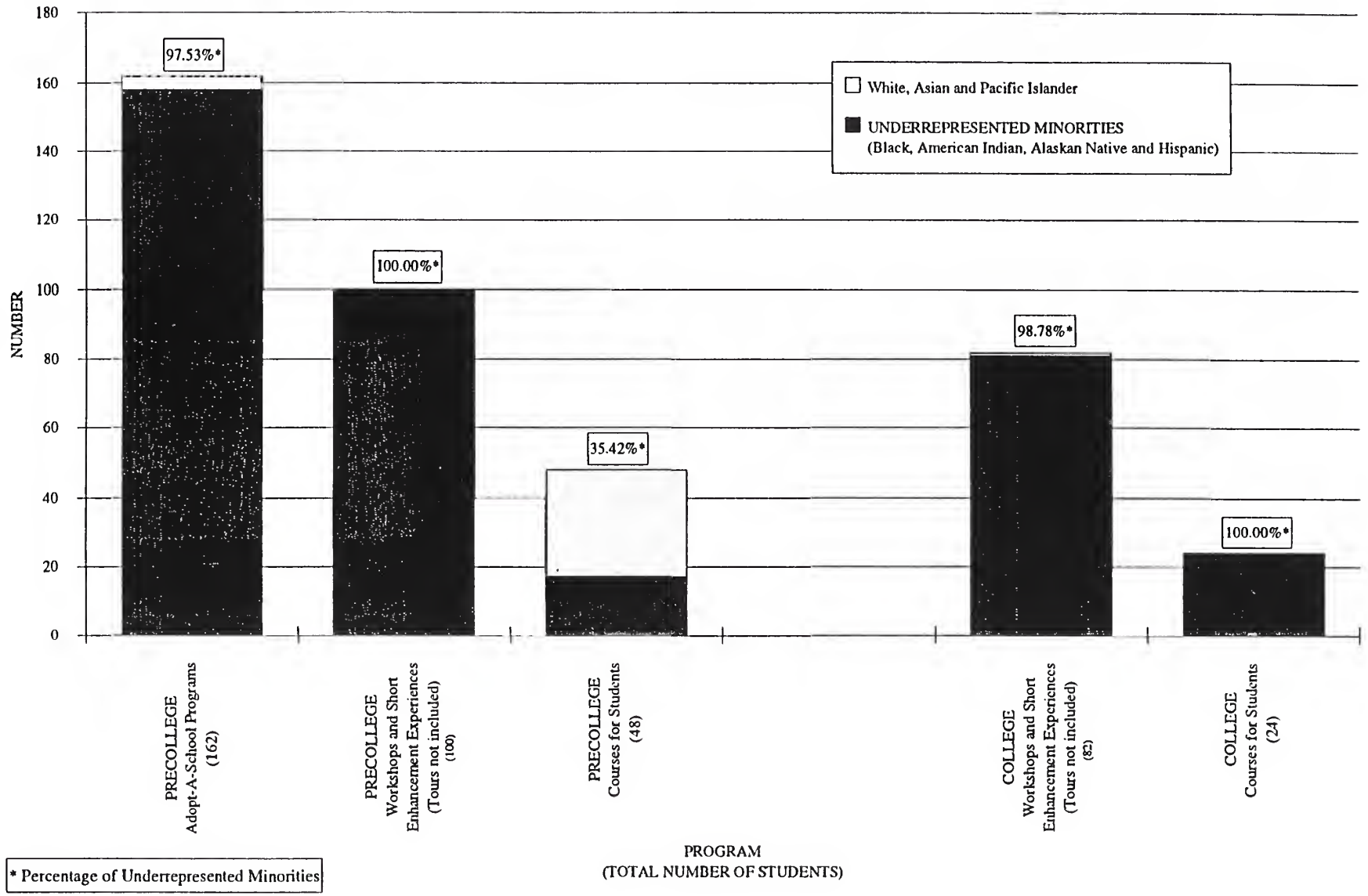
* Diagnostic Radiology Research Program and Protein Expression Laboratory

f11-USA fellows by ICD
12/6/93
3:28 PM

FIG. 11

NIH OFFICE OF EDUCATION

DISTRIBUTION OF ALL MINORITIES IN INTRAMURAL SPECIAL PROGRAMS
DESIGNED, AT LEAST IN PART, TO ATTRACT UNDERREPRESENTED MINORITIES
(1992)

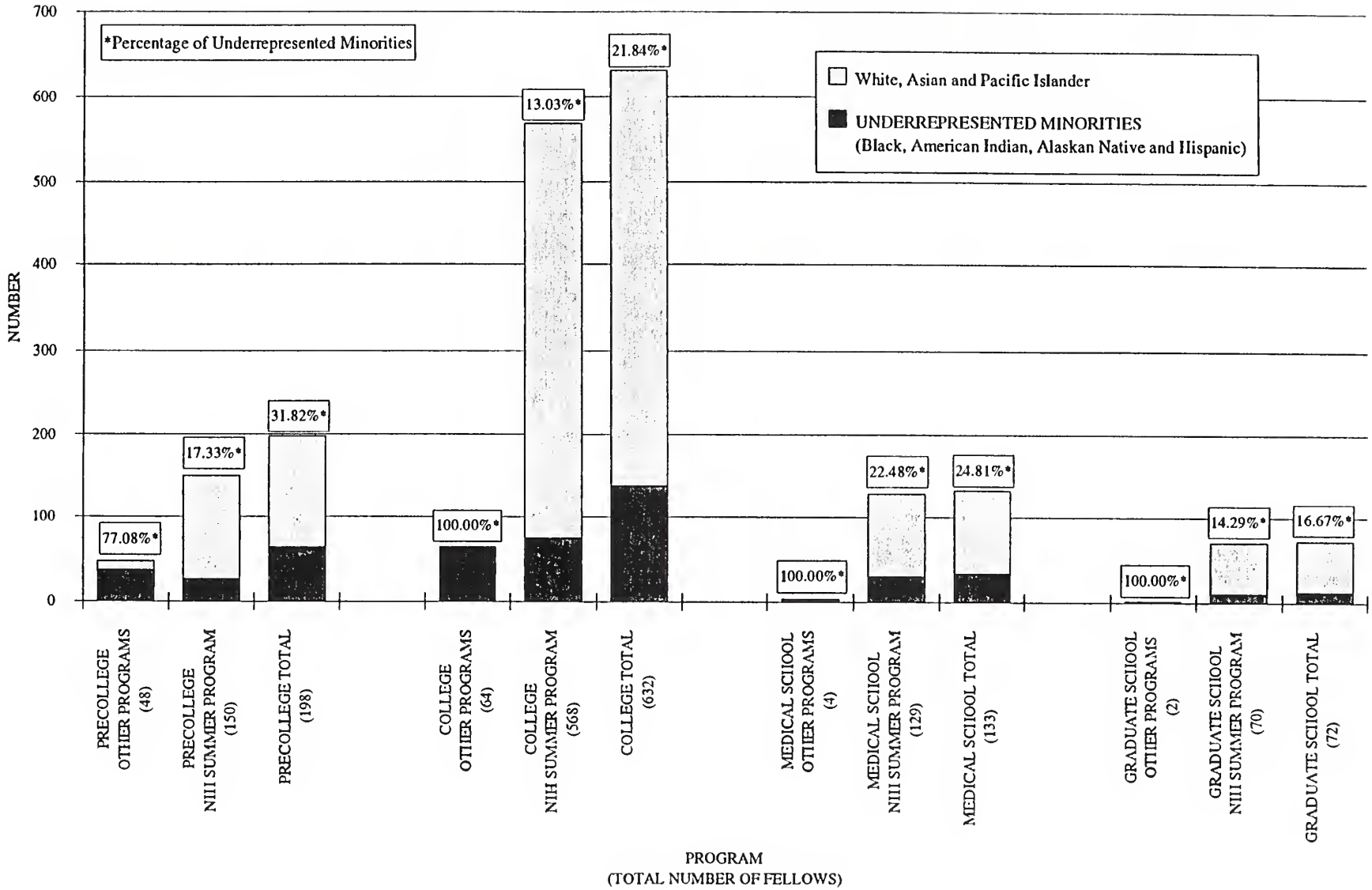


f12-minority special programs
1/6/94
9:31 AM

FIG. 12

NIH OFFICE OF EDUCATION

DISTRIBUTION OF ALL MINORITIES IN INTRAMURAL INTERNSHIP PROGRAMS
(1992)

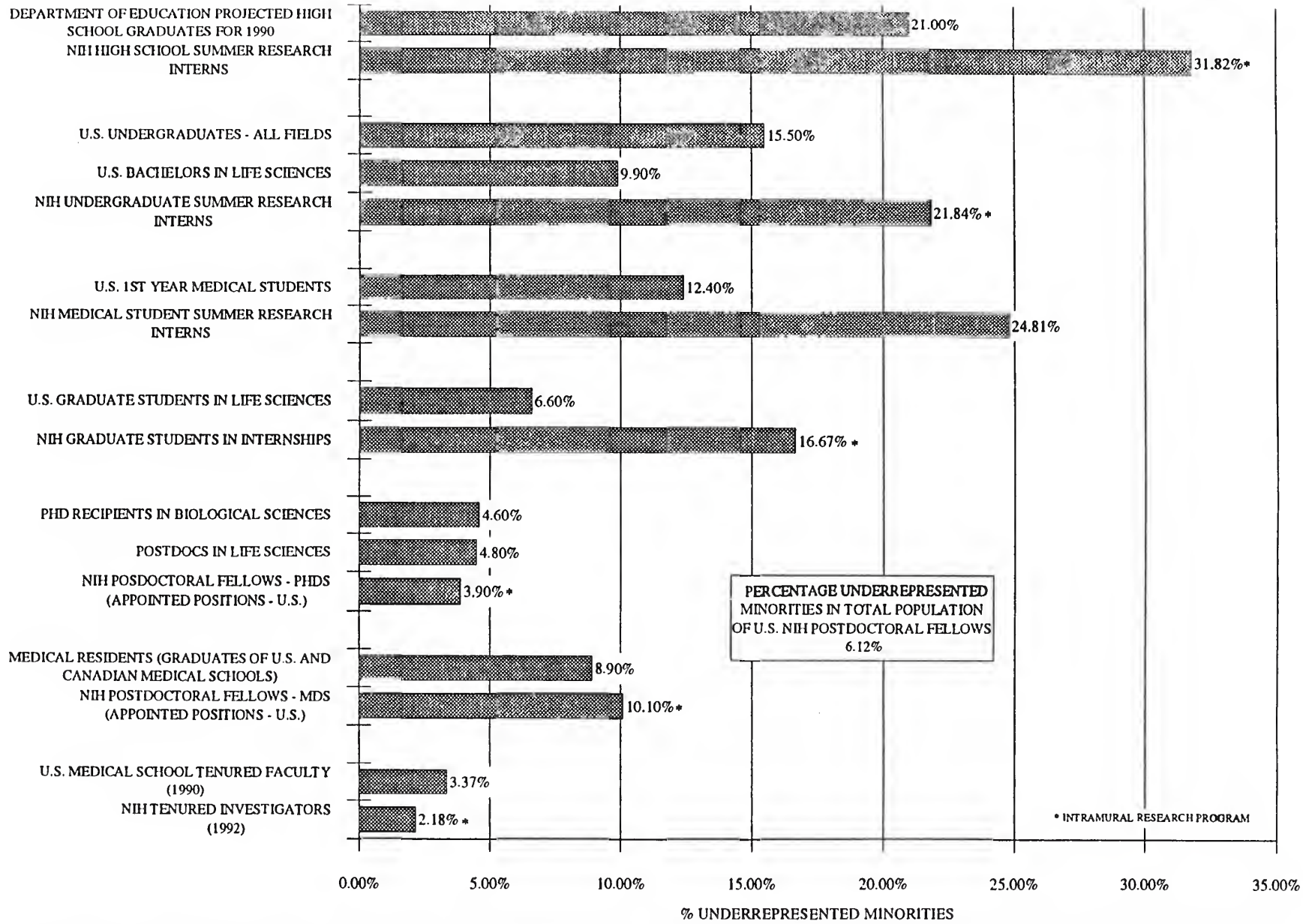


f13-minority internship prg
1/6/94
9:31 AM

FIG. 13

NIH OFFICE OF EDUCATION

PERCENTAGE OF UNDERREPRESENTED MINORITIES AT VARIOUS EDUCATIONAL AND PROFESSIONAL LEVELS



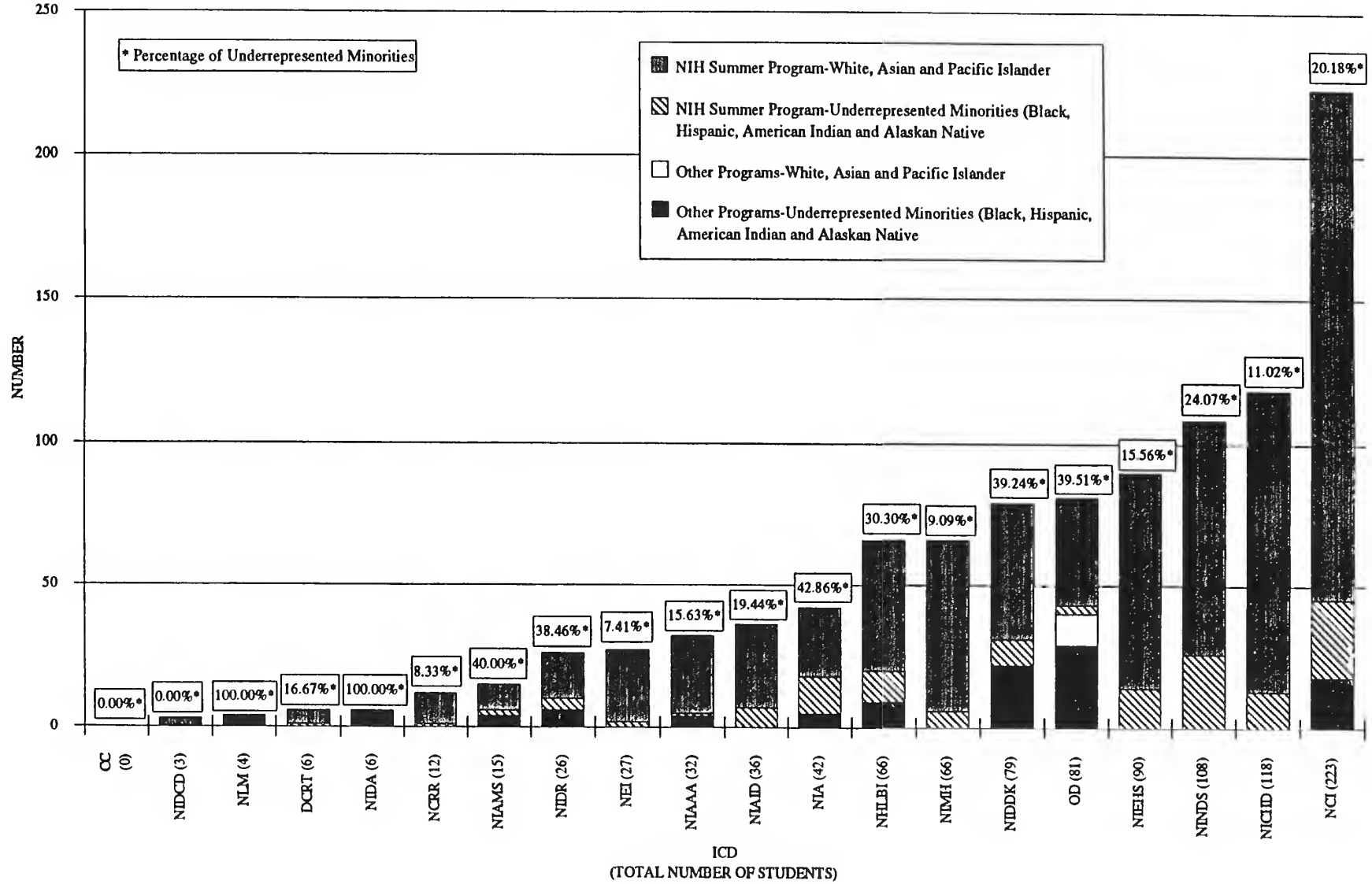
DATA SOURCES: AAMC 1993 DATABOOK, AAMC 1990 PARTICIPATION OF WOMEN AND MINORITIES ON U.S. MEDICAL SCHOOL FACULTIES, NSF SCIENCE AND ENGINEERING INDICATORS 1991, NIH OFFICE OF EDUCATION 1992, NRC SUMMARY REPORT 1991: DOCTORATE RECIPIENTS FROM UNITED STATES UNIVERSITIES, PROJECTED NATIONAL ESTIMATE 1990 OF HIGH SCHOOL GRADUATES FROM 1990 ELEMENTARY AND SECONDARY SCHOOL CIVIL RIGHTS SURVEY, U.S. DEPARTMENT OF EDUCATION. WOMEN AND MINORITIES IN SCIENCE AND ENGINEERING: UPDATE NSF, 1992.

f14-minority various educ level
2/10/94
1:59 PM

FIG. 14

NIH OFFICE OF EDUCATION

DISTRIBUTION OF UNDERREPRESENTED MINORITIES IN INTRAMURAL INTERNSHIPS BY ICD
(1992)

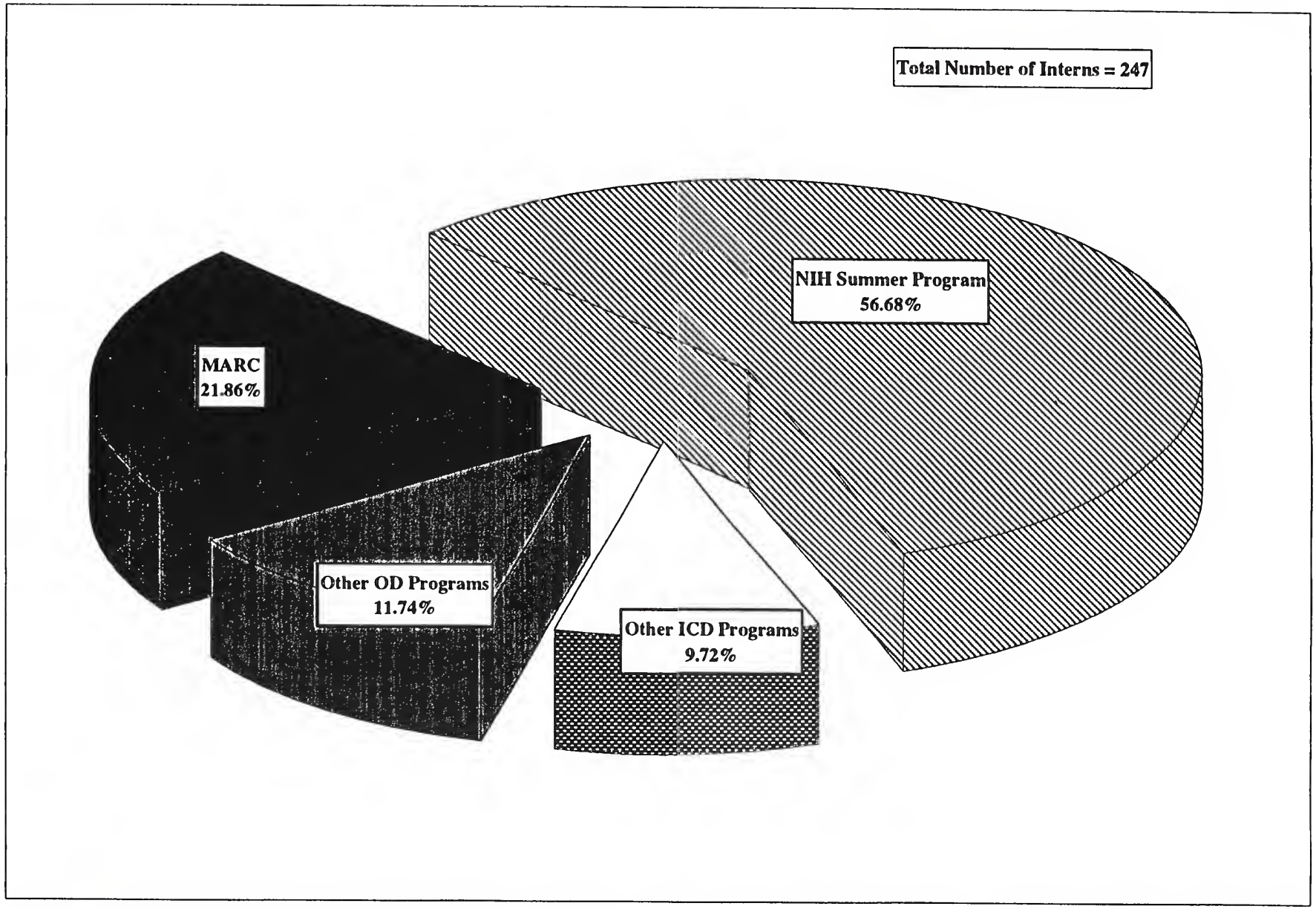


f15-minority internships by ICD
12/6/93
3:29 PM

FIG. 15

NIH OFFICE OF EDUCATION

DISTRIBUTION OF UNDERREPRESENTED MINORITY STUDENTS AMONG INTRAMURAL INTERNSHIP PROGRAMS
(1992)

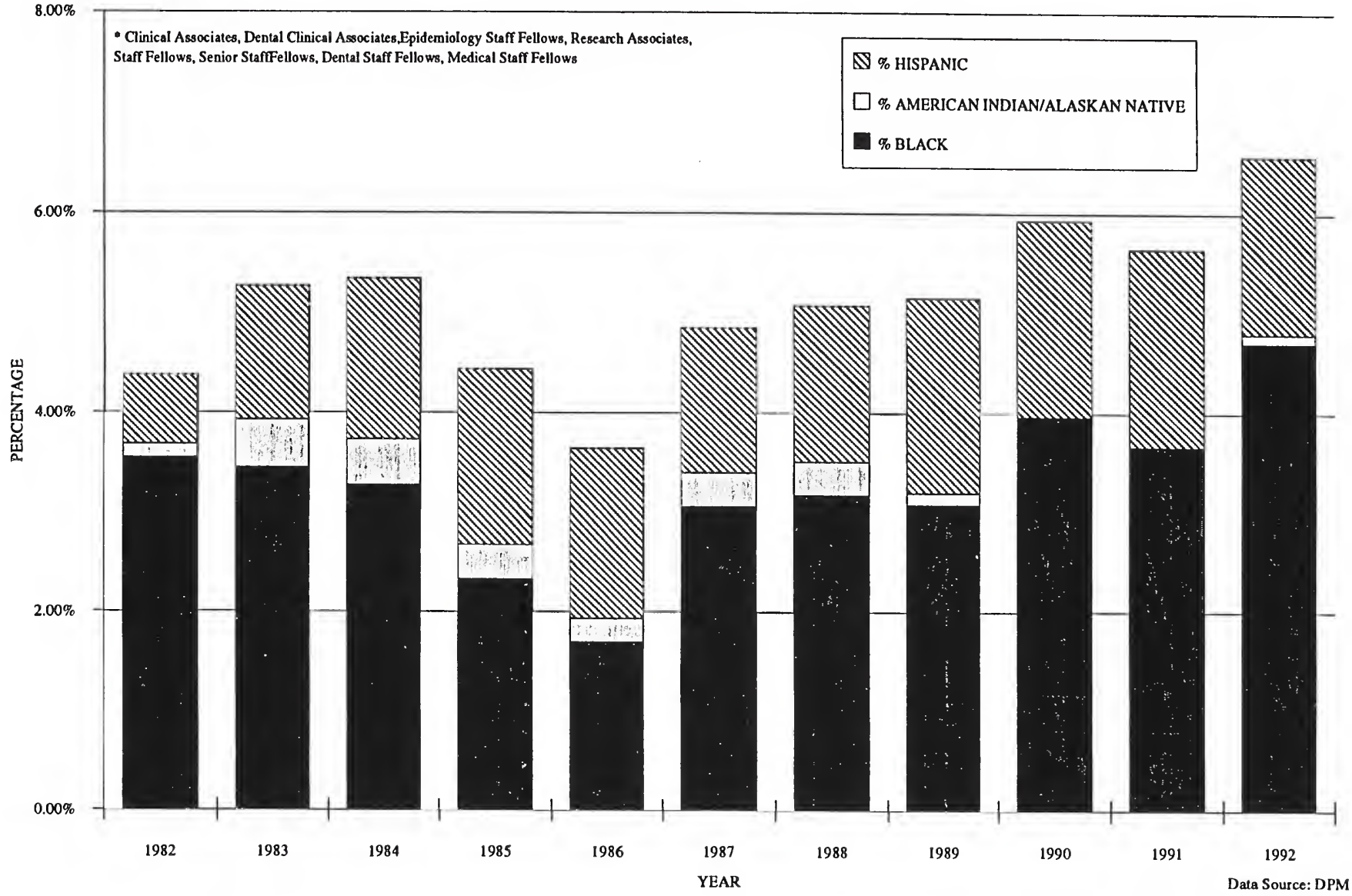


f16-internship programs
12/6/93
3:29 PM

FIG. 16

NIH OFFICE OF EDUCATION

DISTRIBUTION OF UNDERREPRESENTED MINORITY NIH FELLOWS*
FTE ENCUMBERING POSITIONS
(U.S. CITIZENS AND PERMANENT RESIDENTS)
(1992)

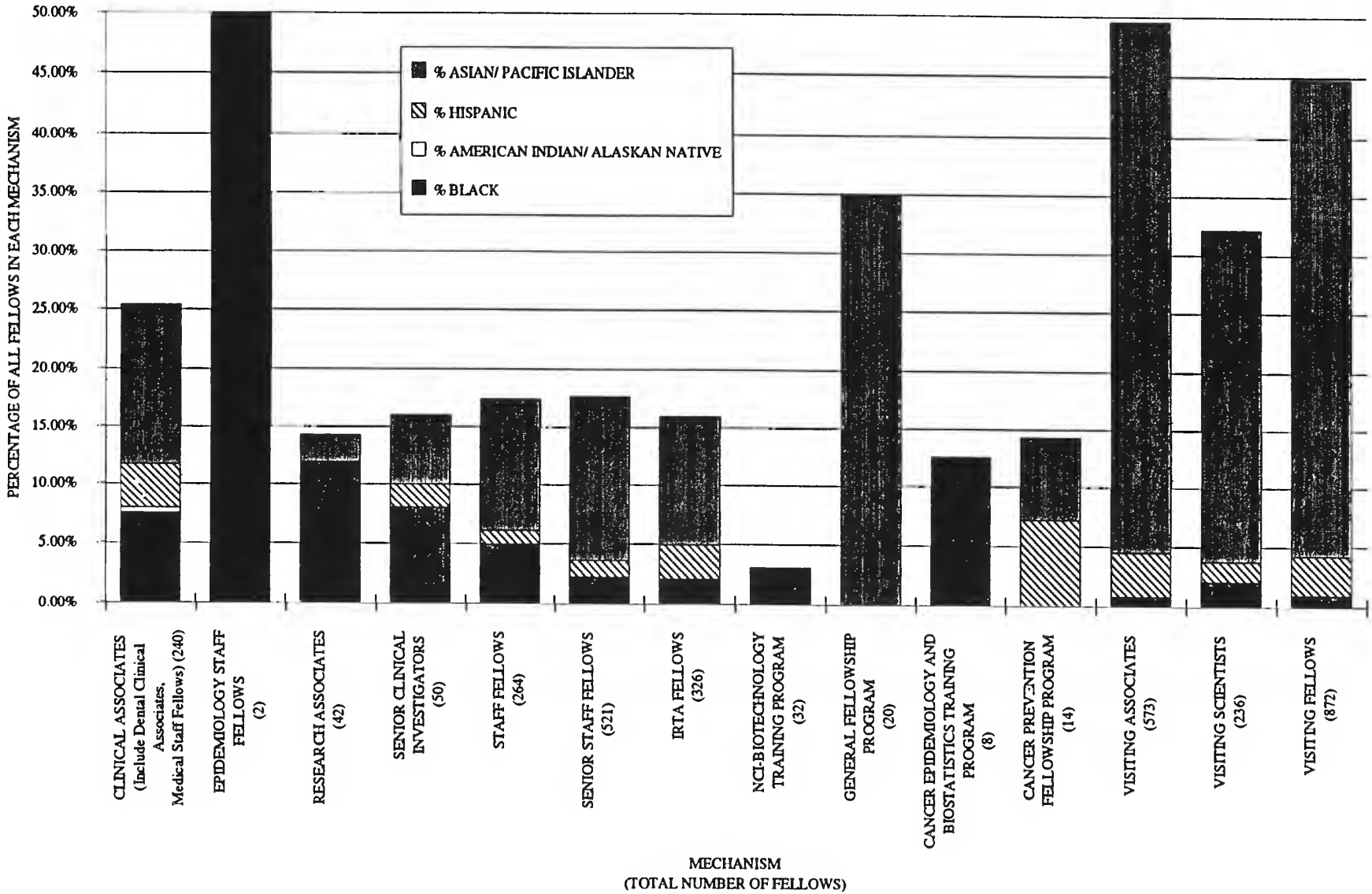


f17-fellows by year-US
12/6/93
3:29 PM

FIG. 17

NIH OFFICE OF EDUCATION

DISTRIBUTION OF ALL MINORITY NIH FELLOWS
BY APPOINTMENT MECHANISM
(1992)

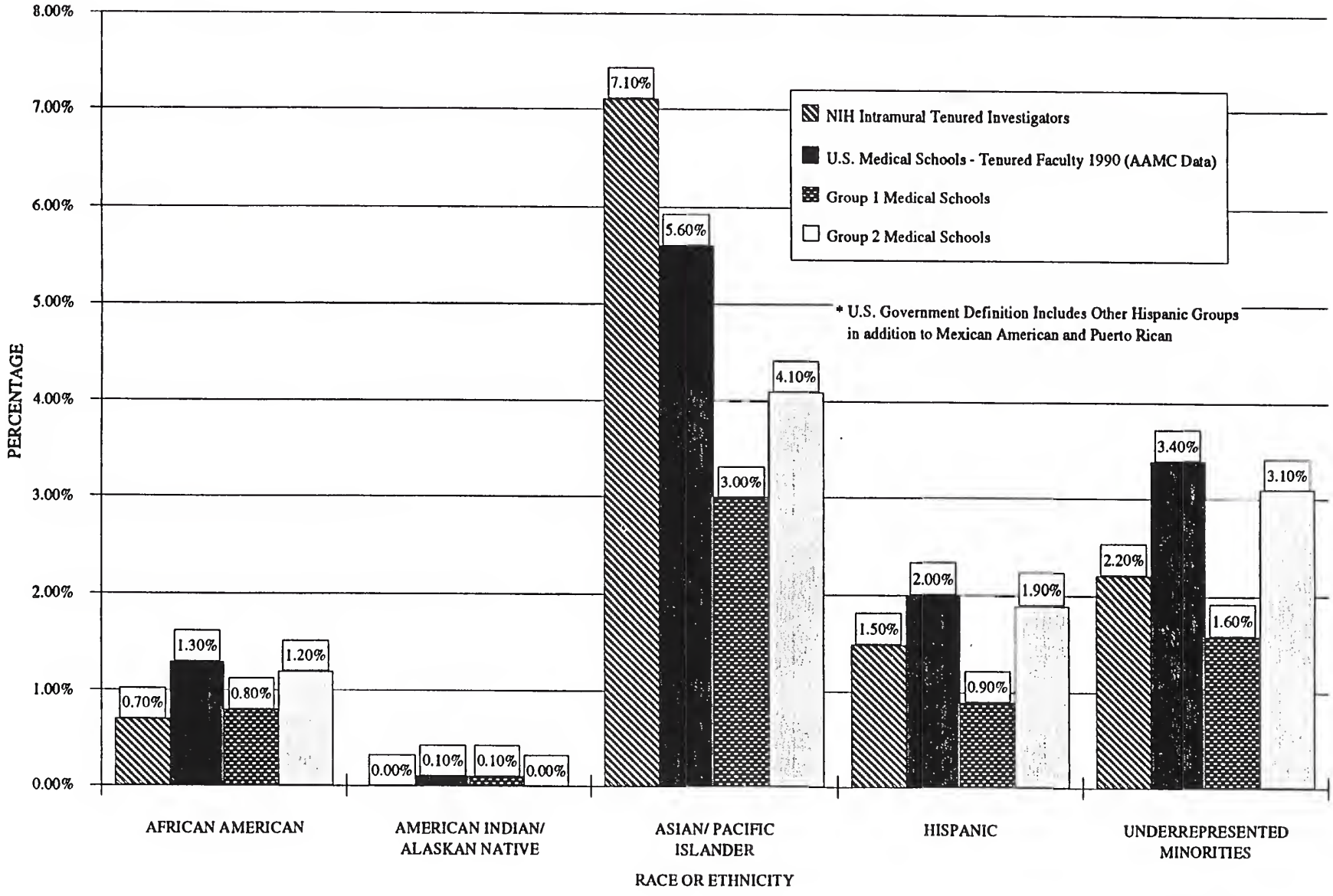


f18-fellows by appt mech
12/6/93
3:30 PM

FIG. 18

NIH OFFICE OF EDUCATION

DISTRIBUTION OF MINORITY TENURED FACULTY AT VARIOUS INSTITUTIONS BY RACE AND ETHNICITY
(1992)



NIH OFFICE OF EDUCATION

Sources: AAMC, NIH DPM, NIH OE

f19-minority tenured faculty
12/6/93
3:30 PM

FIG. 19

Appendix A

REPORT

To

THE NATIONAL INSTITUTES OF HEALTH

On

RECRUITMENT, SELECTION, PROMOTION, RETENTION
And
CONVERSION OF THE STAFF FELLOWSHIP PROGRAM

Submitted: April, 1992

Jalil H. Mutakabbir
National Institutes of Health
Black Employment Program Manager
Office of the Director
Office of Equal Opportunity

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ACRONYMS

CC	-	Clinical Center
DCRT	-	Division of Computer Research and Technology
OEO	-	Office of Equal Opportunity
EEO	-	Equal Employment Opportunity
NCI	-	National Cancer Institute
NCRR	-	National Center for Research Resources
NEI	-	National Eye Institute
NHLBI	-	National Heart, Lung and Blood Institute
NIA	-	National Institute on Aging.
NIAID	-	National Institute of Allergy and Infectious Diseases
NIAMS	-	National Institute of Arthritis and Musculoskeletal Diseases
NICHD	-	National Institute of Child Health and Human Development
NIDCD	-	National Institute on Deafness and Other Communications Disorders
NIDDK	-	National Institute of Diabetes and Digestive and Kidney Diseases
NIDR	-	National Institute of Dental Research
NIEHS	-	National Institute of Environmental Health Sciences
NIGMS	-	National Institute of General Medical Sciences
NIH	-	National Institutes of Health
NINDS	-	National Institute of Neurological Disorders and Stroke
NLM	-	National Library of Medicine

TABLES

TABLE I.1 NIH SERVICE FELLOWS PROGRAM FOR U.S. CITIZENS: SERVICE FELLOWS BY INSTITUTE AND BY RACE AND NATIONAL ORIGIN (RNO) AND SEX GROUP WITHIN RNO GROUP

TABLE I.2 REPRESENTATION OF LABORATORY CHIEFS IN THE PRESENT SURVEY BY INSTITUTE

TABLE I.3 NIH SERVICE FELLOW INTERVIEWEES, SAMPLING BY INSTITUTE AND BY RACE AND NATIONAL ORIGIN (RNO) AND SEX GROUP WITHIN RNO GROUP

TABLE I.4 NIH SERVICE FELLOWS: SENIOR STAFF FELLOWS BY INSTITUTE AND BY RACE AND NATIONAL ORIGIN (RNO) AND SEX GROUP WITHIN RNO GROUP

TABLE I.5 NIH SERVICE FELLOWS: STAFF FELLOWS BY INSTITUTE ANY BY RACE, NATIONAL ORIGIN (RNO) AND SEX GROUP WITHIN RNO GROUP

TABLE I.6 NIH SERVICE FELLOWS: PHS COMMISSIONED OFFICERS BY INSTITUTE AND BY RACE, NATIONAL ORIGIN (RNO) AND SEX GROUPS

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THE REVIEW OF THE NIH STAFF FELLOWSHIP PROGRAM

EXECUTIVE SUMMARY

The Staff Fellowship Program (SFP), which is an important part of the Intramural Program at the National Institutes of Health (NIH), places post-doctoral graduate trainees into employment situations. The program is designed to prepare graduates in the biomedical and behavioral sciences for research occupations. The participants represent a major source from which the NIH can recruit its own career researchers.

From 1987 through 1989, the Office of Equal Opportunity (OEO) performed several analyses of the NIH professional work force and found significant underrepresentation of Blacks, Hispanics, and Native Americans in many NIH occupational groups. Career researchers and the participating service fellows of the SFP were among those occupational groups in which the assessment of the underrepresentation of minorities was "conspicuous absence or manifest imbalance" in the work force.[1] A major concern has been the possible continuation of the underrepresentation of Blacks and other minorities among career researchers at the NIH.

The purpose of the review of the SFP was to determine if structural and attitudinal barriers exist to prevent the recruitment and retention of minorities, particularly Black scientists, in this intramural program. The study has involved documenting the current operation of the SFP and evaluating the program's impact on the recruitment and retention of Blacks and other minority scientists. The evaluation was based on the results of three main activities: 1) a series of interviews at the NIH with key administrative personnel and with service fellows; 2) a review of the official personnel records of the service fellows; and 3) comparisons of the formal NIH policies with the implemented practices and program operations.

The purpose of the SFP is to provide short-term employment and career development for promising research scientists. Its goal is to support biomedical research through providing the Nation a large pool of well trained scientists in the biomedical field, and the SFP achieves this goal by allowing post-doctoral trainees to work in close association with the leading authorities in medical and health-related research.

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[1] Conspicuous absence indicates a work-force representation level of 0 to 25 percent of the representation in the civilian labor force. Manifest imbalance implies a 25 to 75 percent representation level. See Affirmative Employment Program for Minorities and Women, National Institutes of Health, Office of the Director, Division of Equal opportunity, May 1988, pp.125-126.

The SFP operates as a Service Fellowship Program under government statutes and regulations of the Public Health Service (PHS), within which the NIH functions as an operating component. Program administration begins with a Board of Scientific Directors, which includes the NIH Deputy Director of the Intramural Research, and mainly consists of the scientific director(s) for intramural research from each institute, who establish overall policies for the SFP's operation. Each scientific director supervises the intramural program in his/her institute. Laboratory and branch chiefs are tenured career researchers who make the final decisions on recruiting and selecting SFP trainees, subject to the approval of the scientific directors. The chiefs or senior investigators, who are career scientists within a laboratory or branch of an institute and who work under the helms of the laboratory chiefs, supervise the SFP service fellows.

As it is discussed in this report, the SFP includes the basic-science research program and its adjunct programs--medical, epidemiology, and pharmacology fellowship programs. The SFP review, therefore, covers staff fellows, senior staff fellows, medical staff fellows--clinical associates and research associates, including those who have Commissioned Officer Corps appointments, and dental staff fellows--epidemiology staff fellows, and pharmacology fellows in the NIH intramural program.

The review of the SFP indicated the existence of structural and attitudinal barriers to the recruitment, selection, promotion, compensation, and retention of Blacks and other minorities among the NIH's service fellows. The low conversion rates for minority service fellows, which were zero for the years 1982 through 1988, and which are now 65 percent to 70 percent of the conversion rates for non-minorities, indicate the existence of barriers.

The following summarizes the attitudinal and structural barriers found:

1. The lack of significant recruiting efforts by the laboratory and branch chiefs is probably the greatest barrier to the recruitment of minorities. This is disturbing primarily because of the NIH emphasis on the targeting of minority scientists identified in the NIH Affirmative Employment Plan (AEP) and Federal Equal Opportunity Recruitment Program (FEORP) for the SFP. Even though there are no records on the number of minority SFP applicants and no established way of comparing minority SFP applications across institutes, interviews with laboratory and branch chiefs verify the fact that Black and Hispanic SFP candidates are not being sought for SFP positions.

2. A significant number of the laboratory chiefs believe that minority recruiting is unnecessary and probably impossible to do because so few qualified minorities are in the research fields. Moreover, the personal attitudes of the chiefs may be in direct conflict with the policies governing affirmative employment and equal employment opportunity at NIH.

3. The NIH Manual guideline that provides for the periodic review of the Staff Fellow Supply Applicant File and the interinstitute referral of applications is routinely disregarded. Neither the laboratory chiefs nor the personnel offices cited the File as a source of candidates for SFP selections. This places the burden of exposure to NIH on the scientist who may require the intervention of mentors or friends to obtain interviews at prospective laboratories.

4. The general experience level of SFP participants, who often have one or two years' post-doctoral training before coming to NIH, makes it unlikely that many inexperienced researchers will be selected for SFP post-doctoral fellowships. A significant number of the surveyed laboratory chiefs indicated that they seek candidates with previous post-doctoral experience and several major publications. Although most of the minority scientists now in the SFP had those qualifications when they were selected, it is the exception rather than the rule for SFP candidates who have recently graduated. Almost all of the laboratory chiefs reported the use of other NIH intramural programs for hiring post-doctoral fellows, and a few chiefs suggested that other programs such as IRTA and NRSA - be used for training graduates with no previous post-doctoral training. Little is known about the effectiveness of recruiting efforts in these intramural programs, but the pay and work benefits that often accompany these programs are less and inferior to the pay and benefits garnered by the SFP participants.

5. Low compensation relative to the private sector may reduce incentives for scientists to pursue research careers. The low pay levels at NIH are a source of discontent for many NIH administrators as well as service fellows. One situation that makes the low pay levels unattractive for both minority and nonminority scientists is the requirement that scientists repay large debts from student loans or other education financing.

6. The lower pay levels received by some Black males and females in the SFP compared to White service fellows may have two main causes: 1) recent entry into their fellowships; and 2) the absence of negotiations for higher initial stipends.

The barriers by institute are summarized as follows:

Actions	Barriers		Institutes
	STRUCTURAL		
Recruitment	1)	Lack of targeted recruiting efforts	All institutes, particularly laboratory chiefs - NCI, NIA, NICHD
NCI, NINDS	2)	Referrals from colleagues of current laboratory chiefs or other staff	Most institutes, particularly in the NICHD, NIDDK,
	3)	No recruiting at all	The NIA, NICHD, NIAMS, and NIGMS (PRAT)
Selection	4)	No checking of the central Staff-Fellow Applicant Supply File:, lax referral of applications received by institutes	All institutes
	5)	No record of RNO of nonselected applicants	All institutes, except the NIEHS
Extensions and Promotions	6)	No written evaluations and of the service fellows' performance levels	All institutes except for the Commissioned Corps appointments
Compensation	7)	Lack of written guidelines or criteria on the initial or beginning wages for SFP	All institutes
	ATTITUDINAL		
Recruitment and Selection	8)	Poor information about the FEORP or need to recruit minority candidates	Most laboratories
	9)	Laboratory chiefs believe that Blacks and Hispanics lack sufficient training or that qualified minorities are unavailable	Most laboratories
Conversion	10)	Subjective judgment about the exceptional capabilities of conversion is made by some supervisors who think minorities are not well trained or well educated.	All institutes

The barriers are expounded on in the chapters that follow the Executive Summary. Recommendations for the elimination of these barriers are detailed in Chapter VII.

CHAPTER I. OUTLINE, OVERVIEW, STUDY, METHODOLOGY, STRUCTURE OF THE SFP AND PROFILE 0F SERVICE FELLOWS

I. Outline of the Report

Chapter I describes the methodology used in this study and the structure of the Staff Fellowship Program (SFP).

Chapter II describes recruitment under the SFP, including the NIH guidelines for recruiting, an evaluation of how the institutes have implemented recruiting efforts, and specific findings concerning barriers to the recruitment of Blacks.

Chapter III provides descriptions of the selection procedures for SFP participants.

Chapter IV describes the steps involved in converting to career positions for staff fellows and evaluates the effectiveness of the conversion process for minority staff fellows.

Chapter V discusses the variations in compensation for SFP participants.

Chapters VI and VII explain the results concerning the major objectives of the project.

All tables are placed at the end of each chapter and labeled numerically, according to the chapters in which they appear. As examples: the second table in Chapter I is labeled Table I.2; the third table in Chapter II is labeled Table II.3; the fifth table in Chapter III labeled Table III.5.

II. Overview of the Study

In 1987, the NIH Office of Equal Opportunity (OEO) performed an analysis of the NIH work force. This study analyzed the representation of minority groups[1] in specific occupational categories within NIH divisions. This study examined both the structural and attitudinal barriers to the recruitment and retention of underrepresented minority scientists in NIH institutions and divisions. It found that conspicuous absence or a manifest "imbalance exists for some EEO group members" in certain major occupations, including service fellows.[2]

[1]This study defined the term "minority" to mean persons of Black, Hispanic and Native American descent.
[2]FEDERAL EQUAL OPPORTUNITY RECRUITMENT PLAN (FEORP)-Between 1982 and 1987, no Blacks, Hispanics, or Native Americans were among the 126 American scientists, who were converted from service fellowship to NIH career positions.

The purpose of this study was to examine the recruitment methods of the general population of service fellows and minority service fellows through the NIH institutes and recommend areas for improvement. This study focuses on an examination of Black and Hispanic service fellows because they have historically been the most under-represented.

Presently, there are a total of 33 Black service fellows (22 men and 11 women) in NIH institutes. There are 17 Hispanic service fellows (nine men and eight women) and no Native American service fellows. There are 97 Asian service fellows (68 men and 29 women). (See Table I.1, "NIH Service Fellows Program for U.S. Citizens: Service Fellows by Institute and by Race and National Origin (RNO) and Sex Group within RNO Group.

The above absolute numbers represent the following percentages of those employed as service fellows in NIH institutes. At the end of fiscal year 1990, out of 900 researchers who were employed by institutes of the NIH as participants in the Staff Fellowship Program, 3.7 percent were Black, 1.9 percent were Hispanic, 11 percent were Asian. There were no Native Americans in the SFP Program.

This report focuses on underrepresented minorities. Asian and Asian Americans do not fall in this group, since they represent 10.8 percent, or 97 of the total 900 service fellows (See Table I.1). Since Asians constitute 1.6 percent of the national work force, and make up 4.5 percent of the science and engineering work force, they do not constitute an under-represented group.[3]

III. Methodology

The following evaluative process was conducted to develop this report.

1. Key interviews were conducted with a broad range of personnel from each institute within the NIH. These interviews included administrative and scientific personnel, as well as a representative group of service fellows.

2. Personnel records were analyzed for each service fellow.

3. Observations and recommendations were made concerning the data that was gathered and the practices that were observed.

The Interviews

In-depth interviews were conducted with the scientific directors, equal employment opportunity officers (EEO) and personnel officers within each institute to document the SFP's operations throughout the NIH. SFP operations and procedures were also discussed with laboratory and branch chiefs within each institute.

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[3]Demographic Trends and the Scientific and Engineering Work Force, The Office of Technical Assessment, Congress of the United States, December, 1985, page 14.

The scientific directors of each institute selected the laboratory and branch chiefs who were interviewed for this study. The service fellows were selected at random based on the institutes' lists of current service fellows.

Tables I.2 and III.1 show the number of laboratory chiefs and service fellows who were interviewed. Table I.2, "REPRESENTATION OF LABORATORY CHIEFS IN THE PROJECT SURYEY, BY INSTITUTE," - of the 195 laboratory, or branch chiefs from 479 total sections in all NIH institutes, 58 branch chiefs from 64 sections in all NIH institutes were interviewed. This represents 29.7 percent of of existing laboratory and branch chiefs from 13.4 percent of the total sections in NIH institutes.

Table I.1, "NIH Service Fellow Interviewees, by Institute and by Race and National Origin (RNO) and Sex Group within RNO Group," shows that of the 162 total service fellows interviewed, 129 or 80 percent were White and 33 or 20 percent were Black and Hispanic. Thirty-seven, or 23 percent, were White women; 92, or 57 percent, were White men. Twenty-nine, or 18 percent were Black, and four, or two percent, were Hispanic. Nineteen, or 12 percent of the total, were Black men; ten, or six percent, were Black women. Two, or one percent of the total service fellows interviewed, were Hispanic men and one percent were Hispanic women.

Compared with the totals of service fellows existing at NIH institutes, (See Table I.1), the percentages of those interviewed by race, national origin and sex group are representative, with an over-sampling of underrepresented minorities, especially Blacks. Eighty-four (755 out of 900) percent of the total of service fellows are White, while only four percent (33) and two percent (17) respectively of service fellows are Black and Hispanic. Eighty percent of those surveyed are White (129), 18 percent Black (33), and two percent (4) Hispanic (See Table I.3).

Personnel Record and File Reviews

Computerized personnel data records were used in collecting information about SFP's participants. A random sample of service fellows was taken from a list of existing service fellows from all institutes, including staff fellows, senior staff fellows, dental staff fellows, epidemiology staff fellows, pharmacology fellows and medical staff fellows, including clinical associates and research associates.

A formal review of the official personnel folders for each service fellow was conducted. These folders contain extensive information about each service fellow, including:

a. beginning position title
b. hiring date
c. pre-NIH training
d. publication record
e. stipend or salary increases and special awards
f. background information and other work experiences

IV. Administration of the Staff Fellowship Program

1. Staff Fellowship Program: Purpose and Structure

The Staff Fellowship Program (SFP) is an employment and training program that exists throughout the NIH. It places recent graduates with M.D. and Ph.D. degrees (or equivalent doctoral degrees) into excepted service jobs as non-tenured scientists. These non-tenured scientists work with preceptors, or mentors, while they gain experience in their chosen fields and in the NIH environment.

The purpose of the SFP is to provide short-term employment and professional career development for promising research scientists. The program helps provide the NIH with the highest caliber of trained scientists in the biomedical fields.

The SFP also helps trainees work in close association with many of the leading authorities in medical and health-related research. The experiences fellows acquire during the SFP program, provide the foundation for careers in the biomedical sciences at the NIH and other organizations.[4]

The service fellowship program has two components. It consists of: 1) Staff Fellowship Programs and, 2) Visiting Programs.

The Staff Fellowship Program trains U.S. citizens and resident aliens eligible for U.S. citizenship. The Visiting Program trains foreign researchers. These researchers are called visiting associates and visiting scientists.[5]

A Board of Scientific Directors, consisting primarily of the governing directors for intramural research within each of the institutes, establishes and updates policies for the NIH's Staff Fellowship Program.[6]

There are 185 staff fellows in the 17 institutes within the NIH (See Table I.4, "NIH Service Fellows: Staff Fellows, by Institute and by Race and National Origin and Sex Group). Of this 185, 153 (83%) are White, 9 (5%) are Black and 3 (2%) are Hispanic. Twenty (11%) are Asian.

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[4]The purpose of the SF program is not necessarily to train scientists for a career at NIH. The SFP is designed to strengthen research in the biomedical and behavioral sciences by ensuring a continuous exchange of talent between the NIH and other research centers. Outstanding staff fellows may be offered permanent, tenured, research appointments at the NIH only as staffing permits.

[5]See PHS Instruction 302-5

[6]Laboratory and branch chiefs make the final decisions on recruiting and selecting fellows, subject to the approval of the scientific director. Senior investigators are tenured scientists within a laboratory or branch of an institute, and often have the same responsibilities as laboratory chiefs, particularly with respect to the supervision of staff fellows.

2. Organizational Components

The Staff Fellowship Program consists of one basic science research program with several adjunct programs. Adjunct programs include: the Medical Staff Fellowship Program, the Epidemiology Training Program, Pharmacology Research Associates Training (PRAT) Program, and the non-tenured PHS Commissioned Corps appointments.[7]

NIH rules and regulations for the SFP cover the appointments of staff fellows, senior staff fellows, medical staff fellows in the civil-service, dental staff fellows, epidemiology staff fellows and PHS Commissioned Corps appointments. Participants are staff fellows and senior staff fellows, who are involved in basic-science or laboratory research.

Adjunct programs provide a mix of clinical and laboratory research, clinical-only research, or other specialized training. The two types of medical staff fellows are research associates and clinical associates. They work under either the civil service system or the PHS Commissioned Corps system. The Pharmacology Research Associates Training (PRAT) program, which is included in this report, is sponsored by the National Institute for General Medical Sciences. However, it also places its trainees within other institutes to perform as staff fellows or medical staff fellows.

Qualifications - The SFP is a post-doctoral training program. Previous experience as a post-doctoral trainee or as a medical resident is not required for staff fellowship appointments. Candidates who have had more than seven years of post-doctoral or medical specialty training are not usually considered.

The Short-Term Employment Commitment - Staff fellowships are generally offered as one or two year appointments with an option for year-to-year extensions of one year, not to exceed seven years. There is a maximum appointment of seven years for staff fellowship appointments. Additional years beyond the first two are not guaranteed, and service fellows must receive approval of extensions for years three and four from the Scientific Director and years five, six, and seven from the NIH Deputy Director for Intramural Research.

Medical staff fellowships usually involve a three-year commitment between the service fellow and the NIH. However, these fellowships may also extend to optional fourth and fifth-year appointments with the approval of the clinical branch chief and scientific director of the institute. Epidemiology staff fellowships provide a three-year employment schedule, where the service fellows attend accredited Schools of Public Health during the first year. The PRAT fellowships represent a two-year commitment only. However, NIH institutes may offer service fellowships for a period of one year or less. After a two-year initial appointment, the maximum number of subsequent years may be limited to five.

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[7]The NIH Manual, Chapter 2300-320-1 lists the adjunct programs and explains their connections. See Appendix B for more information about these programs.

3. Profile of Recent Service Fellows

Service Fellows: As of October 6, 1990. there were 393 service fellows (See Table I.2). Of these, 328 or 83 percent are White; 52 or 13 percent are Asian; eight or two percent are Black; and, five or one percent are Hispanic.

Staff Fellows: Staff fellows represent the next largest group. There are 185 staff fellows, including pharmacology research and training (PRAT) staff fellows. Of this number, 153 or 83 percent are White; 20 or 11 percent are Asian: nine or five percent are Black; and, three or two percent are Hispanic (See Table I.5).

PHS Commissioned Officers: Service fellows, who are Public Health Service commissioned officers, constitute the next largest group within the SFP (See Table I.6). There are a total of 153 service fellows, of which 127, or 83 percent are White; 12 or eight percent are Black; 11 or eight percent are Asian; and three or two percent are Hispanic.

Medical Staff Fellows: Medical staff fellows constitute the fourth largest group within the SFP (See Table I.7). There are a total of 151 medical staff fellows, of which 128 or 85 percent are White; 13 or nine percent are Asian; six or four percent are Hispanic; and four or three percent are Black.

Research Associates and Epidemiology Staff Fellows: Research Associates and Epidemiology staff fellows constitute the smallest group within the SFP. There are only 18 throughout the NIH institutes. Seventeen or 94 percent are White; one is Asian (See Table I.8).

Sex Composition of Service Fellows: Women, including White, Black, Asian and Hispanic make up 288 of the 900 of the service fellows. This is 32 percent of the total. Of this number, 240 or 27 percent of the total are White; 29 or three percent of the total are Asian; 11 or one percent of the total are Black; and eight or one percent of the total are Hispanic. White women make up 83 percent of the total for all women service fellows (See Table I.1).

Sex Composition of Staff Fellows: Women make up 67 or 36 percent of the 185 staff fellows. Of this number, 56 or 30 percent of the total are White women. Nine or five percent of the total are Black women; four or two percent are Asian women; one or one-half of one percent are Hispanic women. White women make up 84 percent of the total female staff fellows throughout the NIH institutes (See Table I.2).

Sex Composition of PHS Commissioned Officers who are Staff Fellows: Women comprise 24 percent or 36 of the 153 total PHS commissioned offers who are service fellows. Of this total there are 31 White women, or 20 percent of the total; three Black women, or two percent of the total; and two Asian women, or one percent of the total. There are no Hispanic or Native American women in this group See Table I.6). White women comprise 86 percent of the total in this Group (See Table I.6).

Sex Composition of Medical Staff Fellows: Women are 31 percent or 47 of 151 of the total of medical staff fellows. White women are 87 percent or 41 of 47 of the total in this group. There is only one Black woman, three Hispanic women and three Asian women in this group, comprising five percent of the total medical staff fellows and 15 percent of the female medical staff fellows (See Table I.7).

Sex Composition of Research and Epidemiology Staff Fellows: White women make up 44 percent of the research and epidemiology staff fellows, with eight of 18. There are no minority women in this group (See Table I.8).

CHAPTER I - TABLES

TABLE I-1. NIH SERVICE FELLOWS PROGRAM FOR U.S. CITIZENS: SERVICE FELLOWS BY INSTITUTE AND BY RACE AND NATIONAL ORIGIN (RNO) AND SEX CATEGORY WITHIN RNO GROUP

	BLACK			HISPANIC			NATIVE AMERICAN			ASIAN			WHITE			TOTALS		
INSTITUTE	Tot	F	M	Tot	F	M	Tot	F	M	Tot	F	M	Tot	F	M	Tot	F	M
CC	0	0	0	2	1	1	0	0	0	2	0	2	18	7	11	22	8	14
DCRT	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	0	2
NCRR	1	0	1	0	0	0	0	0	0	2	1	1	7	0	7	235	79	156
NCI	8	2	6	2	0	2	0	0	0	15	3	12	210	74	136	10	1	9
NEI	2	1	1	1	0	1	0	0	0	1	0	1	22	7	15	26	8	18
NHLBI	2	0	2	1	1	0	0	0	0	19	3	16	75	25	50	97	29	68
NIA	0	0	0	1	0	1	0	0	0	3	2	1	25	6	19	29	8	21
NIAID	3	1	2	1	1	0	0	0	0	12	5	7	98	20	78	114	27	87
NIAMS	2	0	2	0	0	0	0	0	0	1	1	0	17	6	11	20	7	13
NICHD	1	0	1	1	1	0	0	0	0	4	2	2	55	18	37	61	21	40
NIDCD	1	1	0	0	0	0	0	0	0	0	0	0	2	0	2	3	1	2
NIDDK	3	1	2	2	1	1	0	0	0	16	4	12	53	14	39	74	20	54
NIDR	3	1	2	3	2	1	0	0	0	6	2	4	24	11	13	36	16	20
NIEHS	3	2	1	1	1	0	0	0	0	3	1	2	45	13	32	52	17	35
NIGMS	1	1	0	0	0	0	0	0	0	1	1	0	17	10	7	19	12	7
NINDS	3	1	2	2	0	2	0	0	0	11	4	7	79	29	50	95	34	61
NLM	0	0	0	0	0	0	0	0	0	1	0	1	6	0	6	7	7	7
Total by RNO, Sex	33	11	22	17	8	9	0	0	0	97	29	68	755	240	515	902	288	614
PERCENT	4	1	2	2	1	1	0	0	0	11	3	8	84	27	57	100	32	68

SOURCE: Henderson Associates. Data extracted from the NIH Computerized Personnel Records as current on October 6, 1990 and corrected for known errors in the race/national origin and sex groups.

NOTES:
1) RNO Groups - Black, Hispanic, Native American including American Indians and Alaskans, Asian or Pacific Islander, and White. SEX group is where, F = female and M = male.
2) NIH SERVICE FELLOWS include staff fellows, senior staff fellows, clinical associates and research associates who are medical staff fellows, clinical associates and research associates in the PHS Commissioned Officers Corps, Epidemiology staff fellows, Dental staff fellows, and Pharmacology Research and Training

TABLE I.2 REPRESENTATION OF LABORATORY CHIEFS IN THE PRESENT SURVEY, BY INSTITUTE

INSTITUTE	NUMBER OF CHIEFS		NUMBER OF CHIEFS SURVEYED		PERCENT SURVEYED	
NCI	LABORATORY OR BRANCH	TOTAL w SECTIONS	LABORATORY OR BRANCH	TOTAL w SECTIONS	LABORATORY OR BRANCH	TOTAL w SECTIONS
NCI-DCBD	13	45	4	4	30.8	8.9
NCI-DCE	22	50	6	7	27.3	14.0
NCI-DCT	29	60	5	5	31.3	12.5
NEI	6	18	4	4	66.7	22.2
NHLBI	16	40	5	5	31.3	12.5
NIA	7	21	3	4	42.9	19.0
NIAID	15	52	3	4	20.0	7.7
NIAMS	3	6	2	2	66.7	33.3
NICHD	13	34	4	5	30.8	14.7
NIDCD	3	3	0	0	0.0	0.0
NIDDK	25	63	6	6	24.0	9.5
NIDR	10	26	1	1	10.0	3.8
NIEHS	15	17	10	12	66.7	70.6
NINDS	18	44	5	5	27.8	11.4
TOTALS	195	479	58	64	29.7	13.4

NOTES:

1) Laboratory chiefs, branch chiefs, and/or section chiefs were selected by their institute director or scientific director to be interviewed by project staff.

2) NIEHS Divisions, other than the Division of Intramural Research, were surveyed also if the divisions conducted both extramural and intramural research.

TABLE I.3 NIH SERVICE-FELLOW INTERVIEWEES, SAMPLING BY INSTITUTE AND BY RACE, NATIONAL ORIGIN (RNO), AND SEX CATEGORY WITHIN RNO GROUP

INSTITUTE	WHITE/ASIAN SAMPLE			MINORITY SAMPLE						MINORITY TOTALS			GRAND TOTALS		
				BLACK			HISPANIC								
	TOTAL	F	M	TOTAL	F	M	TOTAL	F	M	TOTAL	F	M	TOTAL	F	M
NCI	34	11	23	7	2	5	2	1	1	9	3	6	43	14	29
NEI	4	2	2	1	1	0	0	0	0	1	1	0	5	3	2
NHLBI	10	1	9	3	0	3	0	0	0	3	0	3	13	1	12
NIA	7	3	4	0	0	0	1	0	1	1	0	1	8	3	5
NIAID	21	5	16	2	1	1	0	0	0	2	1	1	23	6	17
NIAMS	1	0	1	2	0	2	0	0	0	2	0	2	3	0	3
NICHD	7	1	6	1	0	1	0	0	0	1	0	1	8	1	7
NIDCD	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
NIDDK	13	1	12	5	2	3	0	0	0	5	2	3	18	3	15
NIDR	3	2	1	3	2	1	0	0	0	3	2	1	6	3	3
NIEHS	17	4	13	2	1	1	1	1	0	3	2	1	20	6	14
NIGMS	0	0	0	1	1	0	0	0	0	1	1	0	1	1	0
NINDS	11	7	4	2	1	1	0	0	0	2	1	1	13	8	5
TOTALS BY RNO, SEX	129	37	92	29	10	19	4	2	2	33	12	21	162	49	113
PERCENT	79.6	22.8	56.8	17.9	6.2	11.7	2.5	1.2	1.2	20.4	7.4	13.0	100	30.2	69.8

SOURCE: Henderson Associates

TABLE I.4 NIH SERVICE FELLOWS: SENIOR STAFF FELLOWS, BY INSTITUTE AND BY RACE AND NATIONAL ORIGIN (RNO) AND SEX GROUP WITHIN RNO GROUP

	BLACK			HISPANIC			NATIVE AMER.			ASIAN			WHITE			TOTALS		
INSTITUTE	TL	F	M	TL	F	M	TL	F	M	TL	F	M	TL	F	M	TL	F	M
CC	0	0	0	1	1	0	0	0	0	1	0	1	6	4	2	8	5	3
DCRT	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1
DRS	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
NCI	1	0	1	0	0	0	0	0	0	6	1	5	79	29	50	86	30	56
NEI	0	0	0	0	0	0	0	0	0	1	0	1	10	1	9	11	1	10
NHLBI	1	0	1	1	1	0	0	0	0	9	3	6	34	12	22	45	16	29
NIA	0	0	0	1	0	1	0	0	0	2	2	0	14	2	12	17	4	13
NIAD	1	0	1	0	0	0	0	0	0	7	3	2	45	10	35	53	13	40
NIAMS	1	0	1	0	0	0	0	0	0	1	1	0	6	1	5	8	2	6
NICHD	0	0	0	0	0	0	0	0	0	3	2	1	22	6	16	25	8	17
NIDCD	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	0	2
NIDDK	1	0	1	0	0	0	0	0	0	9	4	5	26	8	18	36	12	24
NIDR	0	0	0	1	1	0	0	0	0	2	1	1	11	7	4	14	9	5
NIEHS	2	1	1	1	1	0	0	0	0	3	1	2	29	9	20	35	12	23
NINDS	0	0	0	0	0	0	0	0	0	8	2	6	45	15	27	50	17	33
NLM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1
TOTAL BY RNO, SEX	8	1	7	5	4	1	0	0	0	52	20	32	328	104	224	393	129	264
PERCENT	2	0	2	1	1	0	0	0	0	13	5	8	83	26	57	100	33	67

SOURCE: Henderson Associates. Data extracted from the NIH Computerized Personnel Records as current on October 6, 1990, and corrected for known errors in the race/national origin and sex groups.

NOTES: 1) RNO Groups - Black, Hispanic, Native American including American Indians and Alaskans, Asian or Pacific Islander, and White.
SEX group is, F = female and M = Male

2) SENIOR STAFF FELLOWS are fellows who qualified for their appointments by having completed three or more years of post-doctoral training (at the NIH or elsewhere) or three or more years of residency training.

TABLE 1.5 NIH SERVICE FELLOWS: STAFF FELLOWS, BY INSTITUTE AND BY RACE, NATIONAL ORIGIN (RNO), AND SEX CATEGORY WITHIN RNO GROUP

INSTITUTE	BLACK			HISPANIC			NATIVE AMERICAN			ASIAN			WHITE			TOTALS		
	TOT	F	M	TOT	F	M	TOT	F	M	TOT	F	M	TOT	F	M	TOT	F	M
CC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCRT	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1
NCRR	0	0	0	0	0	0	0	0	0	2	1	1	6	0	6	8	1	7
NCI	2	1	1	0	0	0	0	0	0	1	0	1	35	13	22	38	14	24
NEI	1	1	0	1	0	1	0	0	0	2	1	1	12	6	6	16	8	8
NHLBI	0	0	0	0	0	0	0	0	0	4	0	4	12	6	6	16	6	10
NIA	0	0	0	0	0	0	0	0	0	1	0	1	3	1	2	4	1	3
NIAID	0	0	0	1	1	0	0	0	0	1	1	0	10	3	7	12	5	7
NIAMS	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2	0	2
NICHD	0	0	0	0	0	0	0	0	0	0	0	0	9	3	6	9	3	6
NIDCD	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
NIDDK	1	0	1	0	0	0	0	0	0	4	0	4	11	3	8	16	3	13
NIDR	1	1	0	1	0	1	0	0	0	4	1	3	10	3	7	16	5	11
NIEHS	1	1	0	0	0	0	0	0	0	0	0	0	15	3	12	16	4	12
NIGMS	1	1	0	0	0	0	0	0	0	0	0	0	7	6	1	8	7	1
NINDS	0	0	0	0	0	0	0	0	0	0	0	0	16	9	7	16	9	7
NLM	0	0	0	0	0	0	0	0	0	1	0	1	5	0	5	6	0	6
TOTAL BY RNO,SEX	9	6	3	3	1	2	0	0	0	20	4	16	153	56	97	185	67	118
PERCENT	4.9	3.2	1.6	1.6	.05	1.1	0	0	0	10.8	2.2	8.6	82.7	30.3	2.7	100	36.2	63.8

SOURCE: Henderson Associates. Data extracted from the NIH Computerized Personnel Records as current on October 6, 1990, and corrected for known errors in the race/national origin and sex categories.

NOTES:
1) RNO Groups = black, Hispanic, Native American including American Indians and Alaskans, Asian or Pacific Islander, and white. Sex category is gender where F = female and M = male.
2) STAFF FELLOWS include staff fellows and pharmacology research and training (PRAT) staff fellows.

TABLE I.6 NIH SERVICE FELLOWS: PHS COMMISSIONED OFFICERS BY INSTITUTE AND BY RACE, NATIONAL ORIGIN AND SEX CATEGORIES

INSTITUTE	BLACK			HISPANIC			NATIVE AMERICAN			ASIAN			WHITE			TOTALS		
	TOT	F	M	TOT	F	M	TOT	F	M	TOT	F	M	TOT	F	M	TOT	F	M
CC	0	0	0	1	0	1	0	0	0	0	0	0	6	0	6	7	0	7
DCRT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NCRR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NCI	3	1	2	1	0	1	0	0	0	3	0	3	47	13	34	54	14	40
NEI	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
NHLBI	1	0	1	0	0	0	0	0	0	4	0	4	17	4	13	22	4	18
NIA	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1
NIAID	2	1	1	0	0	0	0	0	0	1	1	0	19	3	16	22	5	17
NIAMS	0	0	0	0	0	0	0	0	0	0	0	0	5	3	2	5	3	2
NICHD	1	0	1	0	0	0	0	0	0	0	0	0	15	5	10	16	5	11
NIDCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NIDDK	0	0	0	1	0	1	0	0	0	1	0	1	7	0	7	9	0	9
NIDR	2	0	2	0	0	0	0	0	0	0	0	0	2	1	1	4	1	3
NIEHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NIGMS	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	0	2
NINDS	2	1	1	0	0	0	0	0	0	2	1	1	6	2	4	10	4	6
NLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL BY RNO,SEX	12	3	9	3	0	3	0	0	0	11	2	9	127	31	96	153	36	117
PERCENT	7.8	2.0	5.9	2.0	0	2.0	0	0	0	7.2	1.3	5.9	8.3	20.3	62.7	100	23.5	76.5

SOURCE: Henderson Associates. Data extracted from the NIH Computerized Personnel Records as current on October 6, 1990, and corrected for known errors in the racial/national origin and sex categories.

NOTES:
1) Service Fellows in the PHS Commissioned Officers Corps were identified by their position titles--Clinical Associate and Research Associate--and the special pay code the NIH uses for Commissioned Corps Officers.
2) The Institutes identify the NIH research divisions where the commissioned officers work.

TABLE I.7 NIH SERVICE FELLOWS: MEDICAL STAFF FELLOWS, BY INSTITUTE AND BY RACE, NATIONAL ORIGIN (RNO) AND SEX CATEGORY WITHIN RNO GROUP

INSTITUTE	BLACK			HISPANIC			NATIVE AMERICAN			ASIAN			WHITE			TOTALS		
	TOT	F	M	TOT	F	M	TOT	F	M	TOT	F	M	TOT	F	M	TOT	F	M
CC	0	0	0	0	0	0	0	0	0	1	0	1	6	3	3	7	3	4
NCI	2	0	2	1	0	1	0	0	0	5	2	3	49	19	30	57	21	36
NEI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NHLBI	0	0	0	0	0	0	0	0	0	0	0	0	12	3	9	12	3	9
NIA	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	2	1	1
NIAID	0	0	0	0	0	0	0	0	0	3	0	3	23	3	20	26	3	23
NIAMS	0	0	0	0	0	0	0	0	0	0	0	0	3	1	2	3	1	2
NICHD	0	0	0	1	1	0	0	0	0	1	0	1	7	3	4	9	4	5
NIDCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NIDDK	1	1	0	1	1	0	0	0	0	2	0	2	7	3	4	11	5	6
NIDR	0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	2	1	1
NIEHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NIGMS	0	0	0	0	0	0	0	0	0	0	0	0	4	1	3	4	1	3
NINDS	1	0	1	2	0	2	0	0	0	1	1	0	14	3	11	18	4	14
NLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL BY RNO,SEX	4	1	3	6	3	3	0	0	0	13	3	10	128	40	88	151	47	104
PERCENT	2.6	0.7	2.0	4.0	2.0	2.0	0	0	0	8.6	2.0	6.6	84.8	26.5	58.3	100	31.1	68.9

SOURCE: Henderson Associates. Data extracted from the NIH Computerized Personnel Records as current on October 6, 1990, and corrected for known errors in the race/national origin and sex categories.

NOTES:
1) RNO Groups = black, Hispanic, Native American including American Indians and Alaskans, Asian or Pacific Islander, and white. Sex category is gender where, F = female and M = male
2) MEDICAL STAFF FELLOWS include service fellows with the titles of Medical Staff Fellows, Dental Staff Fellows, and Clinical Associates and Research Associates who have limited tour-of-duty appointments in the PHS Commissioned Officers Corps.

TABLE I.8 NIH SERVICE FELLOWS: RESEARCH ASSOCIATES AND EPIDEMIOLOGY STAFF FELLOWS BY INSTITUTE AND BY RACE, NATIONAL ORIGIN (RNO) AND SEX CATEGORY WITHIN RNO GROUP

INSTITUTE	BLACK			HISPANIC			NATIVE AMERICAN			ASIAN			WHITE			TOTALS		
	TOT	F	M	TOT	F	M	TOT	F	M	TOT	F	M	TOT	F	M	TOT	F	M
CC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCRT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NCRR	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1
NCI	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0
NEI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NHLBI	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1
NIA	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	2	1	1
NIAID	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0
NIAMS	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1
NICHD	0	0	0	0	0	0	0	0	0	0	0	0	3	1	2	3	1	2
NIDCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NIDDK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NIDR	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1
NIEHS	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0
NIGMS	0	0	0	0	0	0	0	0	0	1	1	0	4	3	1	5	4	1
NINDS	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1
NLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL BY RNO,SEX	0	0	0	0	0	0	0	0	0	1	1	0	17	8	9	18	9	9
PERCENT	0	0	0	0	0	0	0	0	0	5.6	5.6	0	94.4	44.4	50.0	100	50.0	50.0

SOURCE: Henderson Associates. Data extracted from the NIH Computerized Personnel Records as current on October 6, 1990, and corrected for known errors in the racial/national origin and sex categories.

NOTES:
1) RNO Groups = black, Hispanic, Native American including American Indians and Alaskans, Asian or Pacific Islander, and white. Sex category is gender where, F = female and M = male
2) RESEARCH ASSOCIATES included in this table are primarily those who have no medical degree or who have opted for a staff fellowship program without patient-care responsibilities, such as a PRAT fellowship supported by NIGMS.

CHAPTER II. RECRUITMENT OF SERVICE FELLOWS

This Chapter documents recruitment in the SFP between 1982 and 1990. The methods of recruiting for different fellowships are summarized across institutes and described in detail for each institute. The recruitment process is analyzed by group for each institute. The information is broken down by title, sex, type of minority and recruitment method in tables for each institute. The information is also summarized for each institute in text that appears under the institute's name in this section.

A brief analysis of the recruitment categories may be helpful in making sense out of the data presented.

Group A

This group reads, "Walked in, telephoned, or wrote letters to laboratory chiefs, or friend; or conference follow". This really means that candidates for positions aggressively marketed themselves and pushed their own candidacies and were, essentially, self-referred. The term self-referred is used elsewhere in this document in this regard.

Group B

This group reads, "Mentor contacted laboratory, or made a referral." This is mentor referral, or the use of the informal network to achieve employment. Use of the informal network should be defined in the traditional sense of networking. Networking in this context means contact between a candidate for employment and a senior administrator, manager, or other person capable of hiring that candidate through a third party, who has credibility with the person capable of hiring the candidate.

Group C

Sent application to the NIH, or its institutes, or was referred by the matching program. This is defined as achieving employment through the formal employment process.

Group D

Responded to advertising. This is defined as achieving employment through response to open advertising.

Group E

Worked as a guest researcher in a NIH laboratory and established contacts with NIH personnel that later led to an SFP appointment. This is also part of self-referral.

Group F

Referred through a job-waiting list. This is part of the formal employment process.

Sources for the evaluation are: 1) NIH manuals and institute briefing books and, 2) interviews with top-level NIH administrators and scientific directors, EEO officers and personnel officers, laboratory and branch chiefs, and service fellows.[1]

The Importance of Informal Networks

Individual laboratory chiefs and senior investigators play key roles in the recruitment of service fellows at NIH. Personal referrals play an important role in the names that surface to laboratory chiefs and senior investigators. Senior staff at each institution form an informal recruitment network and refer the names of known scientists for positions that become available.

This is a natural process. However, it is a process that can limit the representation of minority scientists who are often not a part of this informal network. For example, a laboratory chief, may decide that another post-doctoral worker is needed to conduct experiments or to begin new research into an area related to an ongoing project. The laboratory chief may make phone calls to former university associates or other colleagues working in the particular scientific specialty. Candidates for the position may be referred to the chief as a result of these telephone conversations. This method of recruitment will, most likely, miss qualified minority applicants unless the laboratory chief has contacts with minority professional networks.

However, the issue of hiring a minority scientist may not even occur to the laboratory chief. Or it may not seem important, or may run counter to perceptions of "universality" and "value free" ideology. These perceptions may work well during the application of scientific methodology. However, they may also narrow the possibilities for minority scientists at the NIH. The extensive use of informal networks to fill vacant positions can be balanced by targeted efforts to recruit minority scientists. For instance, medical staff fellowships and epidemiology fellowships are routinely, openly advertised. However, some branch chiefs reported that they have never advertised for medical staff fellows because they receive unsolicited applications from more qualified applicants than the institute can hire.

The effort to advertise for openings has increased in recent years. However, with some exceptions in the adjunct programs, advertising has seldom been used as a primary method of recruiting for SFP positions. When advertising in scientific journals has been used, it has often been because the laboratory chief believed a shortage of candidates existed. Even among the three laboratory chiefs who say they use advertising (See II.2 and Table II.15), the perception is that advertising is no way to obtain quality or qualified candidates.

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[1]In this Chapter, the term "service fellow(s)" will be used as a general reference to any or all participants in the SFP. Visiting associates and visiting scientists are not included in the reference as they would by normally by definition.

Looking at Table II.2, laboratory chiefs report an equal use of direct referrals and advertising; 23 reported using both. Ten of the laboratory chiefs reported using no recruitment methods. They reported hiring persons they met at conferences and seminars, where they stated that they saw few minorities in attendance. Four reported using all methods in recruiting for openings, direct referrals, conferences and seminars, and advertising.

However, interviews with service fellows report a difference in how vacancies are filled. Sixty-four, or 46 percent of those interviewed, reported direct methods, such as walk-in applications, telephone calls, and letters. The same number, 20, reported being directly referred by mentors and colleagues. Seventeen reported responding to advertising while only ten and five respectively reported either working as a guest researcher and establishing contact with job referral sources, or getting a call based upon their submission of a formal request for employment through NIH's centralized job listings.

The differences in the perceptions of the laboratory chiefs and the service fellows is striking. The laboratory chiefs believe the informal network is the primary tool for recruiting qualified candidates. The service fellows reported the formal system has brought 76 percent of them in to fill vacancies. This figure was developed from A, C, D and E.

Minority staff fellows do not concur with the above. Twelve, or 36 percent, reported being recruited through mentor and referral means. Two, or six percent, reported establishing contacts at NIH after working as a guest researcher. Six, or 18 percent, said they were self-referred. Seven, or 22 percent, said they sent in an application, or were referred through the matching program. Four, or 12 percent, said they answered an advertisement. (See Table II.7).

The results of the survey are mixed. The formal employment process seems to be working much better for majority service fellows than minority fellows, while the informal network has referred fellows surveyed. However, the small number of minority fellows indicates that neither the formal nor the informal hiring process works very well for minorities.

A Comparison of Recruitment Methods Used by Laboratory Chiefs and by Service Fellows

Among service fellows, for example, graduates of ivy-league schools and well-known research training centers are frequent choices for SFP fellowships. Among the NCI's current service fellows, 20 percent graduated from such colleges and universities, including Harvard, Yale, Cornell, and Stanford Universities. Many of the Black scientists are also from these same colleges and universities. Information given by the laboratory chiefs suggests that they rely less upon the ivy league schools for service-fellow candidates today than they did in previous decades, because the overall supply of scientists is decreasing.

Table I.2 and pages 8,9, and 10 respectively, compare recruitment statements from interviews with 64 laboratory chiefs and 136 service fellows. The table compares percentages of those responding to the interviews.

Sixteen percent, or ten laboratory chiefs reported they used no recruitment methods. Sixty-four percent, or 87 service fellows stated that they were self-referred. It indicates that no recruitment techniques were used to receive employment by service fellows. These groups include group A, where service fellows either walked in, followed up with NIH personnel by telephone, or followed-up by letters; group C, where service fellows sent applications to the NIH, or were referred to their positions through the matching program; and group F, where service fellows placed their own names with NIH for circulation for institution positions through job-waiting lists.

Thirty-six percent, or 23 laboratory chiefs said they relied on colleagues for referrals. Fourteen percent, or 20 service fellows reported being recruited from collegial references.

Five percent, or three laboratory chiefs said they recruited candidates after meeting them at professional meetings and seminars. A specific group for meeting and conference referrals was not a part of the service fellows interview questions.

Thirty-six percent, or twenty-three of the laboratory chiefs said they used open advertising, largely in professional journals, to recruit service fellows for open positions. Twelve percent, or 17 service fellows were recruited from open advertisements.

Six percent, or four, of the laboratory chiefs interviewed said they used a combination of all of the previous recruitment techniques mentioned.

Since 64 percent, or 87, service fellows were self-referred, the formal hiring system seems to be working for the pool of general candidates. The informal system, referral by mentors, is responsible for the recruitment of 14 percent, or 20, service fellows. While this system is valued by scientific directors, laboratory chiefs and senior scientists, it has not produced a majority of those recruited into the SFP, if the data for those randomly sampled service fellows holds up for the total population of service fellows.

Minority Recruitment

Part of the barrier to increasing the representation of minorities in the SFP program is structural. The institutes are not required by law or by NIH policy to recruit for service fellows. Each institute establishes its own set of policies and practices. However, under the 1987 Federal Equal Opportunity Recruitment Plan (FEORP) for SFP, special recruitment strategies were recommended to bolster recruitment of minority scientists and to ensure that announcements of NIH research opportunities reach larger populations of minority scientists. These procedures are currently being implemented and an evaluation of their impact will be conducted in future reports.[2]

However, EEO officers are not in the informal communications network that recommends many personnel for research openings:

Despite the lack of structural participation by EEO officers in the informal scientific communications network, that network has had some direct success in referring minorities to the SFP. Of the minority SFP participants surveyed, 12 or 39 percent were referred to their current laboratory chiefs by their college or graduate school mentors (See Table II.3). This compares with four minority fellows who applied to NIH, because they responded to an open advertisement. Six, or 19 percent of minority fellows, were self-referred; seven, or 23 percent, responded to open advertisements. Two, or six percent, worked as guest researchers and referred themselves to additional NIH personnel for position openings. None were recruited through the job-waiting listings.

However, the limiting factors of the informal communications network have had an effect on current minority participation in service fellowship programs. Fourteen percent of all surveyed fellows reported that they were recruited through mentor contact or a direct referral process. Forty-six percent described their recruitment as having developed from their own inquiries through walk-ins, telephone calls, or letters. Twelve percent of the service fellows said that they had answered an open advertisement.

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[2]Some suggested recruitment efforts include:

- advertising in major scientific and professional journals.
- wider outreach of NIH announcements at minority professional seminars and conferences.
- phone calls or other contacts with deans at universities or colleges that enroll large numbers of minority students.
- contacts with minority affairs representatives at majority schools.
- visits to and presentations at colleges and universities with large minority populations.
- recruitment of minority candidates from other NIH career development programs.
- mailing announcements of SFP opportunities to predominantly minority and women's colleges.
- establishment of a centralized pool of applicants who qualify for staff fellowships.
- development of longer-range strategies, including the development of minority scientists through summer training programs for high-school, undergraduate, and graduate students. These methods are designed to enlarge the pool of minority scientists over time.

Affirmative Action Program (AAP) And Federal Equal Opportunity Program (FEORP) Plan For Staff Fellows, Senior Staff Fellows, Medical Staff Fellows, Epidemiology Staff Fellows, And Intramural Research Training Awardees, Fiscal Year 1987-1988, January 1988.

The structure of the recruitment process at NIH is apparently a part of the problem. Only one of the institutes, the NIEHS, has specific policies and practices that make minority recruitment a part of the general recruitment process. The NIEHS' expansive recruitment and outreach activities have provided minority candidates greater access to information concerning openings for available SFP positions. In the NIEHS, open positions are regularly advertised at universities and colleges with large minority doctoral populations. Some of the other institutes have initiated long-range recruitment strategies to enhance the pool of minority candidates, including the NCI, NIAID, and NINDS.

Table II.2 is a synopsis of data on minority recruitment. It is a percentage and absolute break down of minority service fellows across all NIH institutes. This data is available only for Black and Hispanic service fellows included in the interviews conducted.

A total of 30 minorities in various fellowship categories were interviewed. Twenty percent, or 11 minority service fellows were self-referred by the methods previously discussed. Thirty-five percent, or 11, received their positions through collegial recommendations. Twenty-two percent, or seven, sent applications to NIH, or were referred to their positions through the matching program. Fifteen percent, or four, responded to open advertisements. Eight percent, or two, established contact with NIH personnel while working as guest researchers. None were referred for openings because they were on job-waiting lists.

From the data gathered, several statements can be made about recruitment of minority service fellows. Thirty-five percent of the fellows were placed from collegial references. Twenty percent were sell-referred. While the numbers are not large, the informal system seems to be working somewhat better for minorities than for the general population of service fellows.

On the other hand, self-referral and the formal recruitment system are not working for minorities. No minorities interviewed said they were hired through the job-referral system. Only 22 percent, or seven, said they were hired through the application process, or the matching program. At present, if the 30 minority service fellows interviewed are an indication of the total minority service fellow population at the NIH, additional efforts need to be made in the formal recruitment system to add to the numbers of minority service fellows.

Recruitment and Low Pay Levels

Compensation for the post-doctoral trainees at the NIH is low compared to some opportunities in the private sector. According to NIH administrators and laboratory chiefs, the pay disparities for service fellows usually range from about 50 percent higher pay at major university centers, to more than 100 percent higher pay in private industry. Physician researchers at the NIH may experience the greatest reductions if they have completed three or more years of residency training. Compensation issues are covered in detail in Chapter V. of this report.

The low pay levels serve to reduce incentives to pursue research careers for all service fellows. However, this disincentive may effect minority and women scientists even more. Many post-doctoral graduates have incurred large financial debts from both undergraduate and graduate educational loans. Their need to repay these loans may prevent them from considering research careers or otherwise restrict their research activities. Minority scientists may be over-represented among those post-doctoral candidates who have large debts to repay.

The Matching Program

The matching program for medical staff fellowships is one centralized NIH mechanism for recruitment that has been implemented since the 1980's. The matching program directs physicians who are interested in clinical and biomedical research into the appropriate areas of research at the NIH. Through the matching program, physicians respond to general advertisements about medical staff fellowships at the NIH and they request application forms from the NIH's employment service. During the application process, candidates select through a priority listing, those laboratories for which they will consider employment. These facilities contact them if they are interested. This process provides general access to information concerning available openings to everyone who is interested.

Recruitment Activities by Institute

The recruitment process for service fellows at each NIH institute was evaluated by conducting a series of interviews with scientific directors and laboratory and branch chiefs. Service fellows were randomly selected for interviews. Minority service fellows were included in the interview process.

1. National Cancer Institute

Interviews were conducted at the NCI with the three scientific directors, a clinical director, and 16 of the laboratory and branch chiefs. Discussions were also held with 46 service fellows.

NCI Scientific Directors - Drs. Alan Rabson, Richard Adamson, and Bruce Chabner are the scientific directors of the NCI's intramural program. Each of the NCI's scientific directors heads a sub-division of the institute and supervises several laboratory units, each of which is operated by a laboratory chief or branch chief.[3]

The scientific directors reported that recruiting was mainly the responsibility of the hiring laboratory chief. They stated that the referral process was generally used to fill scientific openings as they occur.

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[3]A fourth division of the NCI is just starting its intramural program. NCI personnel in that division were not interviewed.

All of the scientific directors, including the clinical director, Dr. Gregory Curt, reported that they have participated personally in outreach activities, including attending career-day sessions at minority universities and colleges and meeting with their deans and other administration and facufty members at predominantly Black institutions.

They said that they will continue to promote long-range strategies for increasing the pool of minority scientists. All three directors suggested that the main problem with minority recruitment is that there are too few Black and Hispanic scientists and too few well-trained candidates from which to recruit. In addition, the scientific directors suspect that the NIH cannot attract the few available well-trained minority scientists because of low salaries.

Dr. Rabson expressed concerns based on his past experiences, about finding qualified Black scientists only to quickly lose them after their training to university research departments, private industry, or other, more lucrative positions outside the NIH.

Dr. Chabner said that it has been easier to find and recruit minority women scientists. He said that he wants to see more targeting of recruiting efforts toward minority premed students. Dr. Chabner believes that there is a lack of emphasis given by minority school deans in science departments on getting graduates to consider research as a career option.

Dr. Adamson believes a loan-repayment option in the medical staff fellowship programs, similar to AIDS program option, would improve recruitment results. He has also offered his laboratory chiefs a total of ten extra employment slots if they need to create positions for newly found qualified minorities.

NCI Laboratory and Branch Chiefs - The extensive use and effect of the informal recruiting network was confirmed by the NCI laboratory and branch chiefs interviewed. The referral process was the most often used recruitment technique by 12 laboratory chiefs. Only six said that they sometimes use advertising. Five said they use the referral process only as their primary source of candidates. Three reported they did not recruit since applicants write or call the laboratory. None of the 16 chiefs reported any personal recruiting or outreach activities, and none reported making requests to other NIH personnel to perform such activities.

NCI does not have more minority scientists, they said, because:

1) No targeted recruitment effort is being made because "we seek the very best candidates who qualify". (six responses)

2) Too few minorities are in the biomedical research fields. (four responses)

3) More targeted recruiting must be done. (three responses)

NCI Service Fellows - Thirty-seven NCI-SFP participants were interviewed. Table II. shows the methods by which these service fellows were recruited.

Twenty-two of the 46 service fellows interviewed reported they contacted the laboratory chief or senior investigator directly by telephone or by letter. Eight were employed as a result of a referral. Ten sent formal applications to NIH, or were referred through the matching program. A total of six responded in the following categories: one to an open advertisement, three worked as a guest researchers and established contacts, and two were called through formal channels after submitting an application.

The pattern for minorities is different. Of the 12 staff fellows interviewed, four were self-referred, five were referred by mentors, two sent in applications and one developed his own contacts after working as a guest researcher. This again indicates that the formal employment process is not working as well as it could in terms of minority referrals.

Only two service fellows reported that they had answered open advertisements. Only one Black service fellow reported being selected for the SFP based on his performance in another NIH program.

National Eye Institute (NEI)

Acting scientific director, Dr. Paul O'Brien, four laboratory chiefs and six service fellows, including two Black fellows, were interviewed. One of the laboratory chiefs, Dr. Robert Nussenblatt, became the new scientific director during the development of this report.

NEI Scientific Director - Dr. O'Brien stated that most service fellows contact the laboratories themselves by telephone calls or letters. Clinical fellowships were generally advertised and placement services at professional conferences were occasionally used. NEI has established contacts, Dr. O'Brien said, with school deans at Morehouse College and Howard University to encourage more Black scientists to apply for NEI fellowships.

NEI Laboratory Chiefs. - Three of the NEI laboratory chiefs said that they sometimes advertised for SFP openings, particularly clinical research fellowships. One chief stated that he expects those who are interested in working with him to contact him directly. He said he had no plans to recruit.

In the past, the chiefs used the IRTA program and the option of immediate entry into the Commissioned Corps as recruitment tools to get Black service fellows in the SFP. Although no outreach activities were mentioned during the talks, one laboratory chief suggested that more aggressive recruiting might be required to increase the number of Black and Hispanic scientists at the NIH.

NEI Service Fellows - Of the five service fellows, three were self-referred, one was referred by a mentor and one was a guest lecturer. One minority female was self-referred (See Table II.5).

National Heart, Lung, and Blood Institute (NHLBI)

Interviews were conducted with the director of the institute, Dr. Claude Lenfant; Dr. Edward Korn, the scientific director for intramural research; and five laboratory chiefs. Twelve service fellows in NHLBI were also interviewed.

Dr. Lenfant said that more minorities, particularly Black, would be in the NIH candidate pool if minority medical schools had better research programs. The Director wants to continue a visiting faculty program that he started about six years ago to help improve the capabilities of minority researchers at minority colleges.

NHLBI Scientific Director - The scientific director reported that the main recruiting method for NHLBI laboratories was the referral process. However, laboratory chiefs advertise for some SFP openings. He stated that few Blacks apply through responding to advertisements and that he believed that few Blacks were in his field of research. Dr. Korn did not indicate any outreach activities to recruit minorities, but he knew that responsibilities for outreach activities were given to the EEO officer for the institute.

NHLBI Laboratory Chiefs - Four out of the five laboratory chiefs reported that hiring was conducted primarily through referrals. No specific minority outreach activities were reported by the chiefs.

NHLBI Service Fellows - Seven of the fifteen service fellows interviewed said they wrote or called someone in the laboratory to see if the institute had any SFP openings. Five sent formal applications, or were referred through the matching program. Two received employment through mentor referrals. Of the five minority service fellows, (five Blacks), three sent in formal applications and two were self-referred. (See Table II.6)

National Institute On Aging (NIA)

The scientific director, four of the laboratory chiefs, and seven service fellows were interviewed. The new EEO officer and Personnel manager were also interviewed, but had not engaged in any recruitment activities.

The NIA Scientific Director - Dr. George Martin has been the NIA's scientific director for less than two years, although he has been at the NIH in other positions for over 30 years. He stated that he seldom recruits Ph.D. candidates directly into the SFP, but recruits them into the IRTA program and then later may convert the IRTA fellows to service fellows. He does, however, hire, physicians directly into SFP positions.

Dr. Martin stated that he finds it difficult to locate minority candidates in the required specialty areas. He has had only one Black candidate referred to him through his EEO office.

NIA Laboratory Chiefs - The surveyed laboratory chiefs said that they recruit through advertising and the referral process. Only one of the chiefs reported outreach activities to find minority candidates.

According to the three chiefs,

1) Minorities have not established contacts with the laboratory chiefs or senior investigators.

2) Too few minority scientists are in the research specialties.

3) More aggressive recruiting by NIA is required.

One laboratory chief stated that the NIA is fortunate to have associations with local universities and colleges, such as Johns Hopkins University, but that competition for the NIA fellowships is fierce as a result and this situation might hinder minority recruitment.

Service Fellows - Of the eight service fellows at NIA, three marketed themselves by directly communicating with laboratory chiefs, two were recruited through a mentor referral, (networking), one reported answering an open advertisement, and two worked as guest researchers in NIH laboratories prior to their current position and participated in networking to gain employment. One Hispanic service fellow was recruited through referral by a mentor (See Table II.7).

The National Institute Of Allergy And Infectious Diseases - (NIAID)

The NIAID Scientific Director. - Dr. John Gallin, the scientific director of NIAID was interviewed, as were four laboratory chiefs and 23 service fellows. Open positions are largely filled, he said, through professional referral. However, positions are now advertised in professional journals.

Dr. Gallin has been involved in several recruitment outreach activities to find candidates for research positions. For example, during the last five years, he and his staff have written letters to the deans of universities and medical schools and he has visited, along with his assistant for minority affairs, predominantly Black medical schools to recruit for intramural research programs.

The scientific director believes that there is a perception among Black medical professionals that research takes good doctors away from critical primary care duties. This limits the number of professionals available for biomedical research, he said. He believes the Loan Repayment Program for AIDS researchers, however, has been a good recruiting tool and would like to see similar programs in other areas.

NIAID Laboratory Chiefs - Four laboratory chiefs were interviewed[4]. One said that he sometimes advertises for SFP openings. Three said they recruited primarily through referrals from colleagues. One suggested that more recruiting must be done to obtain minority scientists. On said that he believes there are too few minorities in the research field.

[4]Interviews were planned with two laboratory chiefs and other personnel at the NIAID's off-site location in Montana, but project staff was unable to make the required visit.

NIAID Service Fellows - Twenty-five service fellows were interviewed. (See Table II.8). Nine were hired through their own efforts (self-referral) including, telephone follow-up, writing letters, etc. Six were contacted through mentors, seven sent in formal applications, two responded to open advertisements and one was called because he was on a job vacancy listing.

Four Black physicians either sent applications to NIH, or applied through the NIH matching program for medical staff fellowship positions.

National Institute Of Arthritis And Musculoskeletal And Skin Disorders (NIAMS)

NIAMS Scientific Director - Dr. Henry Metzger stated that because the NIAMS is small and comparatively new, it did not have any recruiting programs, NIAMS consists of four laboratories. Dr. Metzger said that the pool for researchers in specialties related to NIAMS is small and that he is having difficulty finding senior researchers.

NIAMS Laboratory Chiefs - Two other[5] laboratory chiefs were interviewed at the NIAMS. They use referrals and direct contact as means to fill vacancies and do not participate in outreach activities to recruit minority scientists.

NIAMS Service Fellows - A senior staff fellow and staff fellow, both Black males, reported initiating contact with their laboratories through letters and telephone calls. One clinical research associate, a White male, also reported being self-referred. (See Table II.9).

National Institute Of Child Health And Human Development - (NICHD)

The NICHD scientific director and five of the laboratory chiefs were interviewed.

NICHD Scientific Director - Dr. Arthur Levine, the scientific director, said that openings were filled by referral and direct contact. He said that while no minority outreach efforts were conducted, he said he would like to get more referrals from centralized sources at the NIH.

Dr. Levine reported special interest in long-range initiatives to recruit minorities, such as the NIH summer training programs. He expressed concern that few Black males were among the students who have received training in the summer program.

NICHD Laboratory Chiefs - Two of the five chiefs surveyed recruit through the referral process. Two others wait for applicants to contact them, and one laboratory chief reported that he sometimes advertises for service fellows.

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[5]Dr. Metzger functions as both an administrative officer and as a laboratory chief at the NIAMS

The chiefs reported that there are few Black and Hispanic scientists at NICHD because,

1) Hiring is not conducted by racial/ethnic group.

2) Minorities do not make direct contacts with NICHD laboratories.

3) NICHD has not made extensive enough outreach recruiting efforts.

NICHD Service Fellows - Two of the seven[6] service fellows followed-up on their own initiative. One was referred by a mentor. One sent in a formal application and one worked as a guest lecturer (See Table II.10). One Black service fellow and one White male reported responding to an advertisement.

National Institute On Deafness And Other Communication Disorders (NIDCD)

The NIDCD is a new institute and is just beginning to restructure its intramural research program. Dr. James Snow is the current acting scientific director until the position is filled. Dr. Snow said that a formal recruitment plan is being enacted and that some advertising already has been used to broaden the institute's outreach efforts. The IRTA program was also being used to bring junior scientists into the institute, where they might later be converted to staff fellows.

One of three staff fellows at the institute was a Black scientist. This minority staff fellow was recruited into the IRTA program before being converted to a staff fellow. There is no table for this institute.

National Institute Of Diabetes And Digestive And Kidney Disorders - (NIDDK)

Interviews were conducted with the NIDDK's scientific director, the deputy director, and six of the laboratory and branch chiefs in the intramural program. Seventeen service fellows were interviewed, including three Black service fellows.

NIDDK Scientific Director - Dr. Jesse Roth, the scientific director for intramural research, was leaving the institute for work in the private sector. He stated that he had participated in the recruitment of service fellows during most of his 27 years at the NIH. He stated that positions are filled through advertising and the "old-boy" network.

Dr. Roth said he has sent letters concerning the SFP and other NIH opportunities to the department heads of predominantly Black universities and to university deans in Puerto Rico. He believes that the NIDDK and the NIH face great competition for good Black candidates. He also believes that early association with promising minority students must be developed by NIH institutions in order to recruit more qualified minority candidates.

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[6]Two of seven senior staff fellows did not answer all questions. That is why the totals for all categories do not equal seven.

NIDDK Laboratory Chiefs - Of the six laboratory chiefs interviewed, half said they used the referral process. Only one described advertising as a recruitment method. One reported using outreach methods by giving seminars and visiting minority universities. One other laboratory chief said that he uses all of these methods.

Three of the chiefs said that they had sought candidates for the SFP by considering the conversion of IRTA and other NIH program participants. Three of the six laboratory chiefs interviewed said that the NIH does not have more minority scientists because there are just too few scientific personnel who choose research as a career.

NIDDK Service Fellows - Of the fifteen NIDDK service fellows surveyed, seven said they made direct contact with their laboratories through phone calls or letters (See Table II.11). Five fellows were recruited through mentor contacts. Three physicians were recruited through direct application, or the matching program. Two responded to open advertisements. One was found through a job applicant listing. Three of the five minority researchers interviewed said they were assisted by mentors or other academic referrals. Two responded to advertisements.

National Institute For Dental Research

NIDR Scientific Director. - Dr. Abner Notkins stated that most recruitment for service fellows and IRTA fellows has been through advertising and referrals from professionals. In some cases, candidates wrote letters to the institute or met laboratory chiefs and other NIH scientists at conferences. Dr. Notkins reported several successful outreach efforts to recruit minority biomedical researchers. However, he has not been able to keep those recruits in his own laboratory. He has lost them to other projects or other institutes.

Other NIDR Staff - One laboratory chief and six service fellows were interviewed. The laboratory chief stated that he usually receives letters from candidates, or they contact him. However, he believed that the referral process yielded the best candidates. As shown in Table II.16, three service fellows were recruited through advertisements; one by mentor contact, and one each by self-referral, mentor assistance and direct application through the matching program. The minority scientists reached their positions of employment with the NIDR, through mentor contact, direct application, the matching program, and response to an open advertisement.

National Institute of Environmental Health Sciences (NIEHS)

NIEHS Scientific Director - Dr. John McLachlan, the scientific director of intramural research at the NIEHS, said he meets weekly with his laboratory chiefs to ensure that they have guidelines for operating the SFP. He expressed concern that the Affirmative Action efforts in his institute have yielded only female and Hispanic staff fellows. He wants to expand recruitment efforts to include outreach to schools with large minority populations. He would also like to introduce more training programs to schools with large minority populations.

Dr. McLachlan said that he may not have established sufficient contacts with minority universities and faculty members. He said that the professional organizations related to NIEHS do not have large minority constituencies.

NIEHS Laboratory and Branch Chiefs. - Twelve laboratory chiefs and branch chiefs at the NIEHS were interviewed. Several of the chiefs reported to division directors other than Dr. Mclachlan.

Eight of the twelve said that they advertise for open SFP positions often, or regularly. However, even with these eight, referrals are still an important means of recruitment. Two of the laboratory chiefs said that candidates mostly contact them by phone calls or through letters. Only two said they conduct outreach activities.

The paucity of minority scientists at NIEHS was caused four said, by the few numbers of minorities in the biomedical research field. Two said the pay is not high enough in biomedical research to attract minority scientists.

NIEHS Service Fellows - Twenty-one service fellows were interviewed. Table II.13 shows the recruitment methods used to hire these service fellows. Seven responded to open advertisements. Five reported that their mentors helped them establish contacts with the NIEHS. Five called the laboratory chief or someone else in the laboratory for an interview. Two worked as guest researchers. One was on a job vacancy list and was called. Five minority service fellows, four Black and one Hispanic, were interviewed. Two were referred by mentors. Two had worked as guest lecturers. One Hispanic responded to an advertisement.

National Institute Of Neurological Disorders And Stroke - (NINDS)

Interviews were conducted with the institute's scientific director and key administrative staff, including five laboratory chiefs, the EEO and personnel officers. Thirteen NINDS service fellows were interviewed. Eleven were selected at random and two Black service fellows were interviewed.

NINDS Scientific Director - Dr. Edward Kopin, the NINDS scientific director, stated that recruiting is left mainly to the laboratory chiefs. He said he shared responsibility for minority recruitment with the institute's EEO officer.

According to Dr. Kopin, the lines of communication are open between his institute and predominantly Black universities. He has lectured at Howard University and visited students at Morehouse to discuss NIH research opportunities.

NINDS Laboratory Chiefs - Two of the five laboratory chiefs said that they use all recruiting methods, including advertising, referrals, and visiting colleges and giving seminars to find SFP participants. Two other chiefs stated that they do not usually need to recruit because candidates contact them. One chief uses the referral process most of the time.

The laboratory chiefs said there are not more Black and Hispanic scientists at NIH because,

1) Recruitment efforts seek specialized expertise not a particular racial or ethnic group.

2) Minorities are not contacting the laboratory chiefs directly or seeking old well-known researchers.

3) Too few Blacks and Hispanics are in the research field.

NINDS Service Fellows - Eight of the 13 service fellows, including one Black, reported that they were self-referred (See Table II.14). Two were referred by mentors. Two others, including one Black, responded to advertisements in journals. One was selected from a list of job applicants. Two, including one Black, were recruited through contacts with their school mentors.

CHAPTER II - TABLES

TABLE II.1 NIH SERVICE FELLOWS: SENIOR STAFF FELLOWS, BY INSTITUTE AND BY RACE AND NATIONAL ORIGIN (RNO) AND SEX CATEGORY WITHIN RNO GROUP

INSTITUTE	BLACK			HISPANIC			NATIVE AMERICAN			ASIAN			WHITE			TOTALS		
	TOT	F	M	TOT	F	M	TOT	F	M	TOT	F	M	TOT	F	M	TOT	F	M
CC	0	0	0	1	1	0	0	0	0	1	0	1	6	4	2	8	5	3
DCRT	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1
NCRR	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
NCI	1	0	1	0	0	0	0	0	0	6	1	5	79	29	50	86	30	56
NEI	0	0	0	0	0	0	0	0	0	1	0	1	10	1	9	11	1	10
NHLBI	1	0	1	1	1	0	0	0	0	9	3	6	34	12	22	45	16	29
NIA	0	0	0	1	0	1	0	0	0	2	2	0	14	2	12	17	4	13
NIAID	1	0	1	0	0	0	0	0	0	7	3	4	45	10	35	53	13	40
NIAMS	1	0	1	0	0	0	0	0	0	1	1	0	6	1	5	8	2	6
NICHD	0	0	0	0	0	0	0	0	0	3	2	1	22	6	16	25	8	17
NIDCD	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	0	2
NIDDK	1	0	1	0	0	0	0	0	0	9	4	5	26	8	18	36	12	24
NIDR	0	0	0	1	1	0	0	0	0	2	1	1	11	7	4	14	9	5
NIEHS	2	1	1	1	1	0	0	0	0	3	1	2	29	9	20	35	12	23
NINDS	0	0	0	0	0	0	0	0	0	8	2	6	42	15	27	50	17	33
NLM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1
TOTAL BY RNO,SEX	8	1	7	5	4	1	0	0	0	52	20	32	328	104	224	393	129	264
PERCENT	2.0	.03	1.8	1.2	1.0	.03	0	0	0	13.2	5.1	8.1	83.5	26.5	57.0	100	32.8	67.2

SOURCE: Henderson Associates. Data extracted from the NIH Computerized Personnel Records as current on October 6, 1990, and corrected for known errors in the race/national origin and sex categories.

NOTES:
1) RNO Groups = Black, Hispanic, Native American including American Indians and Alaskans, Asian or Pacific Islander, and White. Sex category is, F = female and M = male
2) SENIOR STAFF FELLOWS are fellows who qualified for their appointments by having completed three or more years of post-doctoral training (at NIH or elsewhere) or three or more years of residency training.

TABLE II.2 SERVICE FELLOW RECRUITMENT METHODS BY INSTITUTE REPORTED BY LABORATORY CHIEFS

Recruiting Methods[24]

	A	B	C	D	E	
INSTITUTE	Number Reporting					TOTAL
NCI	3	5	2	6	0	16
NEI	1	0	0	3	0	4
NHLBI	1	4	0	0	0	5
NIA	0	1	0	3	0	4
NIAID	0	3	0	1	0	4
NIAMS	1	1	0	0	0	2
NICHD	2	2	0	1	0	5
NIDDK	0	3	1	1	1	6
NIDR	0	1	0	0	0	1
NIEHS	0	2	0	8	1	11
NINDS	2	1	0	0	2	5
TOTAL	10	23	3	23	4	63
PERCENT	16	36.5	5	36.5	6	100

[24]Reported recruiting methods by laboratory chiefs were:

A. None. Receives letters or telephone calls from candidates, or candidates walk into the office for interviews;

B. Calls colleagues for referrals, plus A. above;

C. Meets candidates at conferences and college seminars;

D. Advertises often, or advertises sometimes, mainly in journals, plus B. above; and,

E. Practices all of the above.

TABLE II.3 RECRUITMENT METHODS BY INSTITUTE REPORTED BY SERVICE FELLOWS - MINORITY SAMPLES BY INSTITUTE

Recruiting Methods[25,26,27] (See Notes on Following Page)

INSTITUTE		A	B	C	D	E	F	TOTAL
		Number Reporting						
NCI	Black	2	3	1	0	1	0	7
	Hispanic	0	1	1	0	0	0	2
NEI	Black	0	1	0	0	0	0	1
	Hispanic	0	0	0	0	0	0	0
NHLBI	Black	1	0	2	0	0	0	3
	Hispanic	0	0	0	0	0	0	0
NIA	Black	0	0	0	0	0	0	0
	Hispanic	0	1	0	0	0	0	1
NIAID	Black	0	0	2	0	0	0	2
	Hispanic	0	0	0	0	0	0	0
NIAMS	Black	1	0	0	0	0	0	1
	Hispanic	0	0	0	0	0	0	0
NICHD	Black	0	0	0	1	0	0	1
	Hispanic	0	0	0	0	0	0	0
NIDDK	Black	0	3	0	1	0	0	4
	Hispanic	0	0	0	0	0	0	0
NIDR	Black	0	1	1	1	0	0	3
	Hispanic	0	0	0	0	0	0	0
NIEHS	Black	0	1	0	0	1	0	2
	Hispanic	0	0	0	1	0	0	1
NINDS	Black	1	1	0	0	0	0	2
	Hispanic	0	0	0	0	0	0	0
NIDCD	Black	1	0	0	0	0	0	1
	Hispanic	0	0	0	0	0	0	0
TOTAL		6	12	7	4	2	0	31
PERCENT		19	39	23	13	6	0	100

Notes for Table II.3

[25]Includes count of one "no response" answer.
[26]Reported recruiting methods were:

A. Walked in, telephoned, or wrote letters to laboratory chiefs or friends; or conference follow-up;
B. Mentor contacted laboratory or made referral;
C. Sent application to NIH or the Matching Program;
D. Responded to an advertisement;
E. Worked as a guest researcher in a NIH laboratory and established contact; and,
F. Name was on a job-wanted listing and was called.

TABLE II.4

RECRUITMENT METHODS REPORTED BY SERVICE FELLOWS AT THE NATIONAL CANCER INSTITUTE BY TITLE, BY SEX AND BY MINORITY CATEGORIES

Recruiting Methods[28]

		A	B	C	D	E	F	
TITLE		Number Reporting						TOTAL
STAFF FELLOW		3	2	0	0	1	1	7
SENIOR STAFF FELLOW		8	3	3	1	2	1	18
CLINICAL/RESEARCH ASSOCIATE		11	3	7	0	0	0	21
SEX	MALE	15	3	7	1	3	2	31
	FEMALE	7	5	3	0	0	0	15
MINORITIES	BLACK	4	4	1	0	1	0	10
	HISPANIC	0	1	1	0	0	0	2
	NATIVE AMERICAN	0	0	0	0	0	0	0
MINORITIES		4	5	2	0	1	0	12
NON- MINORITIES		18	3	8	1	2	2	34
TOTAL		22	8	10	1	3	2	46
PERCENT		48	17	22	2	7	4	100

[28]Reported recruiting methods by service fellows were:

A. Walked in, telephoned, or wrote letters to laboratory chiefs or friend; or conference follow-up;
B. Mentor contacted laboratory or made referral;
C. Sent application to NIH or the matching program;
D. Responded to an advertisement;
E. Worked as a guest researcher in NIH laboratory and established contact; and,
F. Name was on a job-vacancy list and was called.

TABLE II.5

RECRUITMENT METHODS REPORTED BY SERVICE FELLOWS AT THE NATIONAL EYE INSTITUTE BY TITLE, BY SEX AND BY MINORITY CATEGORIES

		Recruiting Methods[29]						
		A	B	C	D	E	F	
TITLE		Number Reporting						TOTAL
STAFF FELLOW		0	1	0	0	1	0	2
SENIOR STAFF FELLOW		3	0	0	0	0	0	3
CLINICAL/RESEARCH ASSOCIATE		0	0	0	0	0	0	0
SEX	MALE	2	0	0	0	0	0	2
	FEMALE	1	1	0	0	1	0	3
MINORITIES	BLACK	0	1	0	0	0	0	1
	HISPANIC	0	0	0	0	0	0	0
	NATIVE AMERICAN	0	0	0	0	0	0	0
MINORITIES		0	1	0	0	0	0	1
NON- MINORITIES		3	0	0	0	1	0	4
TOTAL		3	1	0	0	1	0	5

[29]Reported recruiting methods by service fellows were:

A. Walked in, telephoned, or wrote letters to laboratory chiefs or friend; or conference follow-up;
B. Mentor contacted laboratory or made referral;
C. Sent application to NIH or the matching program;
D. Responded to an advertisement;
E. Worked as a guest researcher in NIH laboratory and established contact; and,
F. Name was on a job-vacancy list and was called.

TABLE II.6

RECRUITMENT METHODS REPORTED BY SERVICE FELLOWS AT THE NATIONAL HEART, LUNG AND BLOOD INSTITUTE BY TITLE, BY SEX AND BY MINORITY CATEGORIES

		Recruiting Methods[30]						
		A	B	C	D	E	F	
TITLE		Number Reporting						TOTAL
STAFF FELLOW		4	1	0	0	0	0	5
SENIOR STAFF FELLOW		2	0	2	0	1	0	5
CLINICAL/RESEARCH ASSOCIATE		1	1	3	0	0	0	5
SEX	MALE	6	2	5	0	1	0	14
	FEMALE	1	0	0	0	0	0	1
MINORITIES	BLACK	2	0	3	0	0	0	5
	HISPANIC	0	0	0	0	0	0	0
	NATIVE AMERICAN	0	0	0	0	0	0	0
MINORITIES		2	0	3	0	0	0	5
NON- MINORITIES		5	2	2	0	1	0	10
TOTAL		7	2	5	0	1	0	15
PERCENT		47	13	33	0	7	0	100

[30]Reported recruiting methods by service fellows were:

A. Walked in, telephoned, or wrote letters to laboratory chiefs or friend; or conference follow-up;
B. Mentor contacted laboratory or made referral;
C. Sent application to NIH or the matching program;
D. Responded to an advertisement;
E. Worked as a guest researcher in NIH laboratory and established contact; and,

TABLE II.7

RECRUITMENT METHODS REPORTED BY SERVICE FELLOWS AT THE NATIONAL INSTITUTE ON AGING BY TITLE, BY SEX AND MINORITY STATUS

		Recruiting Methods[30]						
		A	B	C	D	E	F	
TITLE		Number Reporting						TOTAL
STAFF FELLOW		2	1	0	0	0	0	3
SENIOR STAFF FELLOW		1	0	0	1	1	0	3
CLINICAL/RESEARCH ASSOCIATE		0	1	0	0	1	0	2
SEX	MALE	1	1	0	1	2	0	5
	FEMALE	2	1	0	0	0	0	3
MINORITIES	BLACK	0	0	0	0	0	0	0
	HISPANIC	0	1	0	0	0	0	1
	NATIVE AMERICAN	0	0	0	0	0	0	0
MINORITIES		0	1	0	0	0	0	1
NON- MINORITIES		3	1	0	1	2	0	7
TOTAL		3	2	0	1	2	0	8
PERCENT		37	25	0	13	25	0	100

[31]Reported recruiting methods by service fellows were:

A. Walked in, telephoned, or wrote letters to laboratory chiefs or friend; or conference follow-up;
B. Mentor contacted laboratory or made referral;
C. Sent application to NIH or the matching program;
D. Responded to an advertisement;
E. Worked as a guest researcher in NIH laboratory and established contact; and,
F. Name was on a job-vacancy list and was called.

TITLE II.8

RECRUTIMENT METHODS REPORTED BY SERVICE FELLOWS AT THE NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES, BY TITLE, BY SEX AND BY MINORITY CATEGORIES

Recruiting Methods[32]

		A	B	C	D	E	F	
TITLE		Number Reporting						TOTAL
STAFF FELLOW		2	1	2	0	0	1	6
SENIOR STAFF FELLOW		5	4	0	2	0	0	11
CLINICAL/RESEARCH ASSOCIATE		2	1	5	0	0	0	8
SEX	MALE	8	4	4	1	0	1	18
	FEMALE	1	2	3	1	0	0	7
MINORITIES	BLACK	0	0	4	0	0	0	4
	HISPANIC	0	0	0	0	0	0	0
	NATIVE AMERICAN	0	0	0	0	0	0	0
MINORITIES		0	0	4	0	0	0	4
NON- MINORITIES		9	6	3	2	0	1	21
TOTAL		9	6	7	2	0	1	25
PERCENT		36	24	22	8	0	4	100

[32]Reported recruiting methods by service fellows were:

A. Walked in, telephoned, or wrote letters to laboratory chiefs or friend; or conference follow-up;
B. Mentor contacted laboratory or made referral;
C. Sent application to NIH or the matching program;
D. Responded to an advertisement;
E. Worked as a guest researcher in NIH laboratory and established contact; and,
F. Name was on a job-vacancy list and was called.

TABLE II.9

RECRUITMENT METHODS REPORTED BY SERVICE FELLOWS AT THE NATIONAL INSTITUTE OF ARTHRITIS AND MUSCULOSKELETAL AND SKIN DISEASES, BY TITLE, BY SEX AND BY MINORITY CATEGORIES

		Recruiting Methods[33]						
		A	B	C	D	E	F	
TITLE		Number Reporting						TOTAL
STAFF FELLOW		1	0	0	0	0	0	1
SENIOR STAFF FELLOW		1	0	0	0	0	0	1
CLINICAL/RESEARCH ASSOCIATE		1	0	0	0	0	0	1
SEX	MALE	3	0	0	0	0	0	3
	FEMALE	0	0	0	0	0	0	0
MINORITIES	BLACK	2	0	0	0	0	0	2
	HISPANIC	0	0	0	0	0	0	0
	NATIVE AMERICAN	0	0	0	0	0	0	0
MINORITIES		2	0	0	0	0	0	2
NON- MINORITIES		1	0	0	0	0	0	1
TOTAL		3	0	0	0	0	0	3
PERCENT		100	0	0	0	0	0	100

[33]Reported recruiting methods by service fellows were:

A. Walked in, telephoned, or wrote letters to laboratory chiefs or friend; or conference follow-up;
B. Mentor contacted laboratory or made referral;
C. Sent application to NIH or the matching program;
D. Responded to an advertisement;
E. Worked as a guest researcher in NIH laboratory and established contact; and,
F. Name was on a job-vacancy list and was called.

TABLE II.10

RECRUITMENT METHODS REPORTED BY SERVICE FELLOWS AT THE NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT, BY TITLE, BY SEX, AND BY MINORITY CATEGORIES

		Recruiting Methods[34]						
		A	B	C	D	E	F	
TITLE		Number Reporting						TOTAL
STAFF FELLOW		0	0	0	0	0	0	0
SENIOR STAFF FELLOW		1	0	1	2	1	0	5
CLINICAL/RESEARCH ASSOCIATE		0	0	0	0	0	0	0
SEX	MALE	1	0	1	2	1	0	5
	FEMALE	1	0	0	0	0	0	1
MINORITIES	BLACK	0	0	0	1	0	0	1
	HISPANIC	0	0	0	0	0	0	0
	NATIVE AMERICAN	0	0	0	0	0	0	0
MINORITIES		0	0	0	1	0	0	1
NON- MINORITIES		2	0	1	1	1	0	5
TOTAL		2	0	1	2	1	0	6
PERCENT		29	0	14	29	14	0	86

[34]Reported recruiting methods by service fellows were:

A. Walked in, telephoned, or wrote letters to laboratory chiefs or friend; or conference follow-up;
B. Mentor contacted laboratory or made referral;
C. Sent application to NIH or the matching program;
D. Responded to an advertisement;
E. Worked as a guest researcher in NIH laboratory and established contact; and,
F. Name was on a job-vacancy list and was called.

[35]Totals do not add up to the seven interviews conducted because two respondents did not answer all the questions.

TITLE II.11

RECRUITMENT METHODS REPORTED BY SERVICE FELLOWS AT THE NATIONAL INSTITUTE OF DIABETES AND DIGESTIVE AND KIDNEY DISEASES, BY SEX, AND BY MINORITY CATEGORIES

		Recruiting Methods[36]						
		A	B	C	D	E	F	
TITLE		Number Reporting						TOTAL
STAFF FELLOW		2	1	0	0	1	0	4
SENIOR STAFF FELLOW		4	3	1	1	0	0	9
CLINICAL/RESEARCH ASSOCIATE		1	1	2	1	0	0	5
SEX	MALE	7	3	3	1	1	0	15
	FEMALE	0	2	0	1	0	0	3
MINORITIES	BLACK	1	3	0	1	0	0	5
	HISPANIC	0	0	0	0	0	0	0
	NATIVE AMERICAN	0	0	0	0	0	0	0
MINORITIES		1	3	0	1	0	0	5
NON- MINORITIES		6	2	3	1	1	0	13
TOTAL		7	5	3	2	1	0	18
PERCENT		7	33	20	13	7	0	100

[36]Reported recruiting methods by service fellows were:

A. Walked in, telephoned, or wrote letters to laboratory chiefs or friend; or conference follow-up;
B. Mentor contacted laboratory or made referral;
C. Sent application to NIH or the matching program;
D. Responded to an advertisement;
E. Worked as a guest researcher in NIH laboratory and established contact; and,
F. Name was on a job-vacancy list and was called.

TABLE II.12

RECRUITMENT METHODS REPORTED BY SERVICE FELLOWS AT THE NATIONAL INSTITUTE OF DENTAL RESEARCH, BY TITLE, BY SEX, LAND BY MINORITY CATEGORIES

		Recruiting Methods[37]						
		A	B	C	D	E	F	
TITLE		Number Reporting						TOTAL
STAFF FELLOW		1	1	0	0	0	0	2
SENIOR STAFF FELLOW		0	0	0	2	0	0	2
CLINICAL/RESEARCH ASSOCIATE		0	0	1	1	0	0	2
SEX	MALE	1	0	1	1	0	0	3
	FEMALE	0	1	0	2	0	0	3
MINORITIES	BLACK	0	1	1	1	0	0	3
	HISPANIC	0	0	0	0	0	0	0
	NATIVE AMERICAN	0	0	0	0	0	0	0
MINORITIES		0	1	1	1	0	0	3
NON- MINORITIES		1	0	0	2	0	0	3
TOTAL		1	1	1	3	0	0	6
PERCENT		16.7	16.7	16.7[38]	50	0	0	100

[37]Reported recruiting methods by service fellows were:

A. Walked in, telephoned, or wrote letters to laboratory chiefs or friend; or conference follow-up;
B. Mentor contacted laboratory or made referral;
C. Sent application to NIH or the matching program;
D. Responded to an advertisement;
E. Worked as a guest researcher in NIH laboratory and established contact; and,
F. Name was on a job-vacancy list and was called.

[38]Numbers add up to more than 100 because of rounding

TABLE II.13

RECRUITMENT METHODS REPORTED BY SERVICE FELLOWS AT THE NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES, BY TITLE, BY SEX, AND BY MINORITY CATEGORIES

Recruiting Methods[39]

		A	B	C	D	E	F	
TITLE		Number Reporting						TOTAL
STAFF FELLOW		1	0	0	3	3	0	7
SENIOR STAFF FELLOW		4	5	0	5	0	1	15
CLINICAL/RESEARCH ASSOCIATE		0	0	0	0	1	0	1
SEX	MALE	4	4	0	5	2	1	16
	FEMALE	1	1	0	3	1	0	6
MINORITIES	BLACK	0	2	0	0	2	0	4
	HISPANIC	0	0	0	0	0	0	0
	NATIVE AMERICAN	0	0	0	0	0	0	0
MINORITIES		0	2	0	1	2	0	5
NON- MINORITIES		5	3	0	6	2	1	17
TOTAL		5	5	0	7	4	1	22
PERCENT		23	23	0	32	18	4	100

[39]Reported recruiting methods by service fellows were:

A. Walked in, telephoned, or wrote letters to laboratory chiefs or friend; or conference follow-up;
B. Mentor contacted laboratory or made referral;
C. Sent application to NIH or the matching program;
D. Responded to an advertisement;
E. Worked as a guest researcher in NIH laboratory and established contact; and,
F. Name was on a job-vacancy list and was called.

TABLE II.14

RECRUITMENT METHODS REPORTED BY SERVICE FELLOWS AT THE NATIONAL INSTITUTE OF NEUROLOGICAL DISORDERS AND STROKE BY TITLE, BY SEX, AND BY MINORITY CATEGORIES

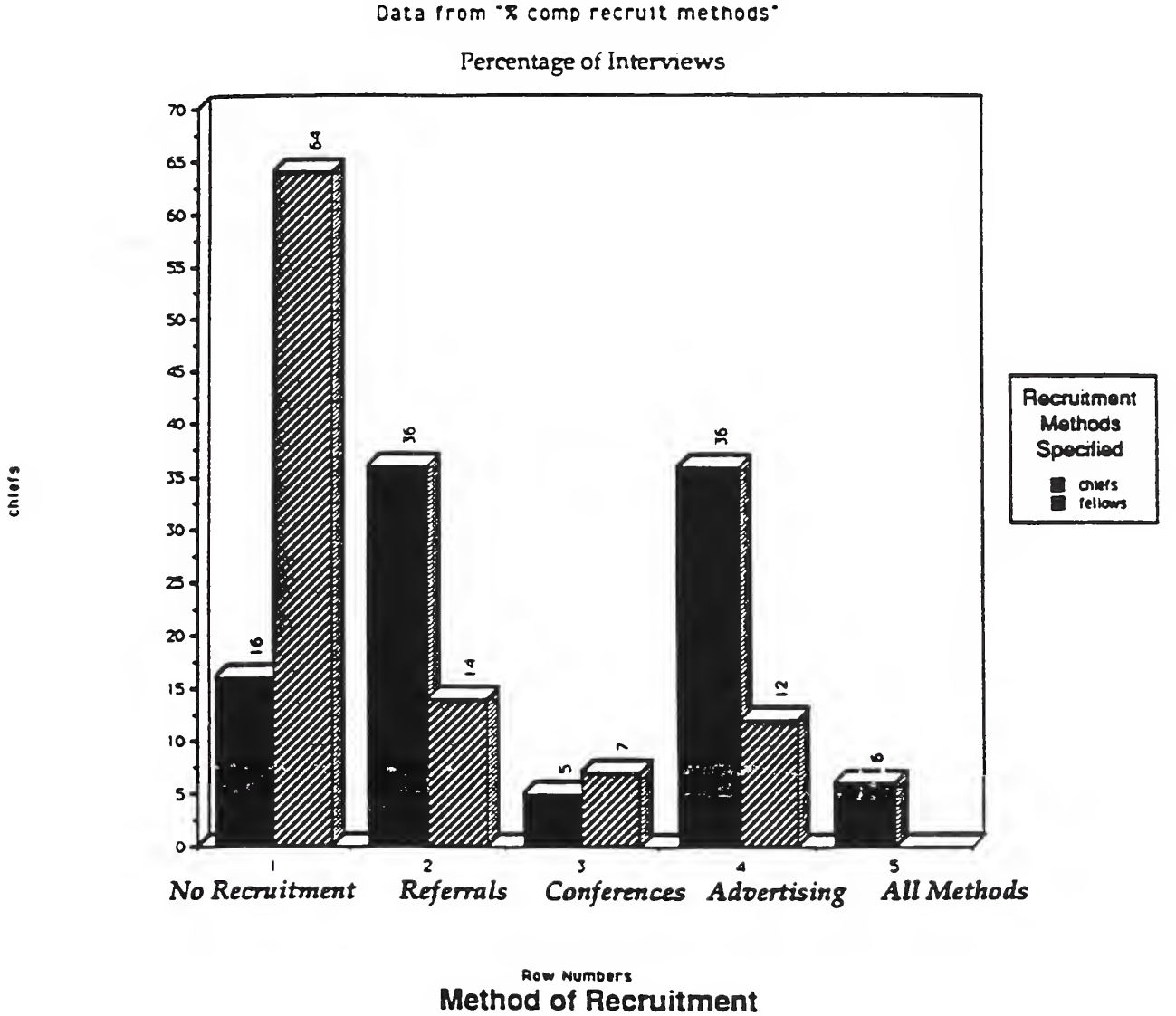
		Recruiting Methods[40]						
		A	B	C	D	E	F	
TITLE		Number Reporting						TOTAL
STAFF FELLOW		2	1	0	0	0	1	4
SENIOR STAFF FELLOW		4	0	0	1	0	0	5
CLINICAL/RESEARCH ASSOCIATE		2	1	0	1	0	0	4
SEX	MALE	3	0	0	2	0	0	5
	FEMALE	5	2	0	0	0	1	8
MINORITIES	BLACK	1	1	0	0	0	0	2
	HISPANIC	0	0	0	0	0	0	0
	NATIVE AMERICAN	0	0	0	0	0	0	0
MINORITIES		1	1	0	0	0	0	2
NON- MINORITIES		7	1	0	2	0	1	11
TOTAL		8	2	0	2	0	1	13
PERCENT		62	15	0	15	0	8	100

[40]Reported recruiting methods by service fellows were:

A. Walked in, telephoned, or wrote letters to laboratory chiefs or friend; or conference follow-up;
B. Mentor contacted laboratory or made referral;
C. Sent application to NIH or the matching program;
D. Responded to an advertisement;
E. Worked as a guest researcher in NIH laboratory and established contact; and,
F. Name was on a job-vacancy list and was called.

TABLE II.15

A Percentage Comparison of Recruitment Methods From Interviews of Lab Chiefs and Service Fellows



Numerical comparison is not possible of random sampling
Percentages do not add up to 100% because of rounding off and non-response to survey questions.

CHAPTER III. STAFF FELLOWSHIP PROGRAM SELECTION

This Chapter describes the requirements for the selection of candidates into the Staff Fellowship Program (SFP).

Regulations and Guidelines

The Federal Government requires PHS Form 3997 and official copies of graduate and medical school transcripts, as well as a summary of the doctoral dissertation. An institute or hiring laboratory may require additional formal procedures, including interviews with laboratory personnel, of conducting seminars in a relevant area of specialization.

Applications may be sent directly to a division of an institute or they can be sent to the Recruitment and Employee Benefits Branch (REBB) of the NIFI's Division of Personnel Management for referral to institutes in the candidate's area of specialization. When an institute receives an application, the institute's personnel office reviews the application to determine basic eligibility for the SFP. The personnel office then considers the application against available openings.

If no openings exist, or no institute is interested in a given candidate, the personnel office sends the application to the REBB for entry into the Staff Fellow Applicant Supply File. Once applications are reviewed and referred to institutes by the REBB, and then returned to the REBB, the applications of qualified candidates are retained for four months in the Staff Fellow Applicant Supply File.

The NIH manual states that the institutes' personnel officers are responsible for checking the Applicant Supply File for qualified candidates for any staff fellow vacancies in their institutes. These efforts are meant to ensure compliance with federal laws. Those eligible for veterans preference who meet the selective factors must be given first consideration for available openings. Furthermore, no candidate may be excluded from consideration or evaluation for the SFP due to non-merit factors, including race, color, religion, sex, handicap, age, national origin, and political affiliation.[1]

Guidelines for Program Selection

NIH guidelines state that a candidate for the Staff Fellowship Program must be an investigator whose prior research experience, whether outside or within the NIH, provides the basis for a candidate to perform substantial, independent research. Candidates may be offered staff fellowship, or senior staff fellowship positions if there is an opening, they meet the previously mentioned conditions, and they meet the following selection criteria:

[1]See PHS Instruction 302-5 and the NIH Manual, Chapter 2300-320-1, pp. 16-18 and its Appendix 2.

1) Staff Fellowship Positions: Have completed their Ph.D. programs, or have equivalent degrees and have less than three years of professional level, post-doctoral research experience. Candidates may also be physicians with less than three years of specialty training in fields related to NIH research.

2) Senior Staff Fellowship Positions: Have completed their Ph.D. programs, or have equivalent degrees and three to seven years of professional level research experience. Candidates may also be physicians with three to seven years of specialty training in fields related to NIH research.

3) A doctoral degree in a biomedical, behavioral, or related science is a general requirement for either position. Candidates may have been certified by a university as meeting all the requirements for such degrees.[2]

The guidelines also state that the program is not to be used to appoint physicians whose primary function is to furnish medical support for patients. Staff fellows cannot be used to fill positions of major responsibility, such as laboratory chief and section chief, or to fill positions in which personal research is not the main responsibility.

Service Fellowship Selection Criteria

According to the responses by surveyed laboratory chiefs, 34 percent, or 22 of 62 surveyed said that they base their hiring decisions on curriculum (CV), or the general educational background and work experiences of the candidate (See Table III.1). Thirty-four percent, or 22 of the laboratory chiefs, said that they base their hiring decisions on the strength of interviews, employment-related seminars, and recommendations.

Sixteen percent, or ten of the 62 chiefs surveyed, said that they base their hiring decisions on the quality of previous post-doctoral training experiences in relevant areas. Nine percent, or six chiefs, said they base their hiring decisions on mentor and collegial referrals. Three percent, or two of the chiefs, said they base their hiring decisions on the academic institutions where the candidate was trained. (See Table III.1).

Minority Selection

During the interviews, questions concerning minority hiring were the most difficult ones to receive a response. Laboratory chiefs and senior scientists with hiring authority were most likely to answer that the hiring process does not take race, or ethnic group into account. However, when asked what minorities could do to make the best possible favorable impression, laboratory chiefs who were willing to respond to the question said that personal contact and a strong initial interview was the most important hiring criteria for minority candidates.

---

[2]NIH Manual, Chapter 2300-320-1, pp. 4-6

The past selection of minority scientists appears clustered into a few of the larger institutes--for example, the NCI, the NIDDK, and the NHLBI. The number of minorities who are participating in the SFP today has not grown over the last seven years. In 1984, 31 Blacks and 12 Hispanic service fellows were employed at the NIH. Currently, the institutes have 33 Blacks scientists and 17 Hispanic scientists in the SFP. Today, the NCI has the largest number of minority scientists, eight Black and two Hispanic researchers. However, these numbers represent a very small percentage of the NCI's service fellows, only three and one-half percent.

Pre-Employment Interviews and Their Impact on the SF Selection Process

One hundred and seven of 172, or 62 percent of service fellows interviewed, said they participated in a pre-employment interview (See Table III.2). Sixty percent of minorities, or 26 of 43 interviewed, participated in a pre-employment interview. Sixty-three percent of men interviewed, or 120, participated in pre-employment interviews.

Pre-Employment Publications

During the interviews, scientific directors and laboratory chiefs indicated that pre-NIH publications were an important consideration in hiring determinations that they make. Table III. shows a breakdown of pre-employment publications by institute, The number of pre-employment publications is unknown for forty-six, or eight percent, of the 565 surveyed service fellows. Forty-eight, or, nine percent, had no publications; 177, or 31 percent, had 1-5 publications prior to employment at an NIH institute, and 294, or 52 percent, had more than five publications prior to employment at an NIH institute.

For Blacks and Hispanics, 25 of the 30 sampled had at least one publication prior to employment and 12, or 40 percent of those sampled had more than five. Only four, or 13 percent, had no publications prior to employment at an NIH institute (See Table III.).

A sex breakdown, shows that 35 males, or six percent, had no prior publications before employment at an NIH institute. The rate for women is two percent, or a total of 13. Twenty percent of men, or 111, had less than five publications, while the rate for women is 12 percent, or 66 had fewer than five publications published prior to employment at an NIH institute.

Two-hundred and five men, or 36 percent of all service fellows, have more than five publications, while the rate for women is 16 percent, or 90 women. One-hundred and eleven male service fellows, or 20 percent of all service fellows, have published 1-6 articles, while 66 women, or 12 percent, have 1-5 articles published. Thirty-five male service fellows, or six percent, have published no articles. Thirteen women, or two percent, have not published any articles (See Table III.5).

CHAPTER III - TABLES

TABLE III.1 SERVICE FELLOW SELECTION CRITERIA REPORTED BY LABORATORY CHIEFS, BY INSTITUTE

Selection Criteria[43]

Number Reporting

	A	B	C	D	E	Institute Total
NCI	5	1	10	0	0	16
NEI	0	0	4	0	0	4
NHLBI	3	0	0	1	1	5
NIA	1	0	0	1	2	4
NIAID	1	0	1	1	1	4
NIAMS	1	0	0	0	0	1
NIDDK	3	1	2	0	0	6
NIDR	0	1	0	0	0	1
NICHD	1	0	2	1	1	5
NINDS	4	0	0	0	1	5
NIEHS	3	0	4	0	4	11
TOTAL	22	3	23	4	10	62
PERCENT	4	3	34	9	16	97

[43] Reported basis for selection by the laboratory chiefs were:

A) General capabilities of the candidate
B) Where the candidate was educated, or receiving training
C) Recommendations and/or strength of interview and seminar
D) Strength of recommendation from a referral
E) Candidate's work experience, including number of years of post-doctoral training

TABLE III.2 THE NUMBER OF SERVICE FELLOWS REPORTING INTERVIEWS BEFORE THEIR NIH EMPLOYMENT, BY INSTITUTE AND BY SEX AND MINORITY GROUPS

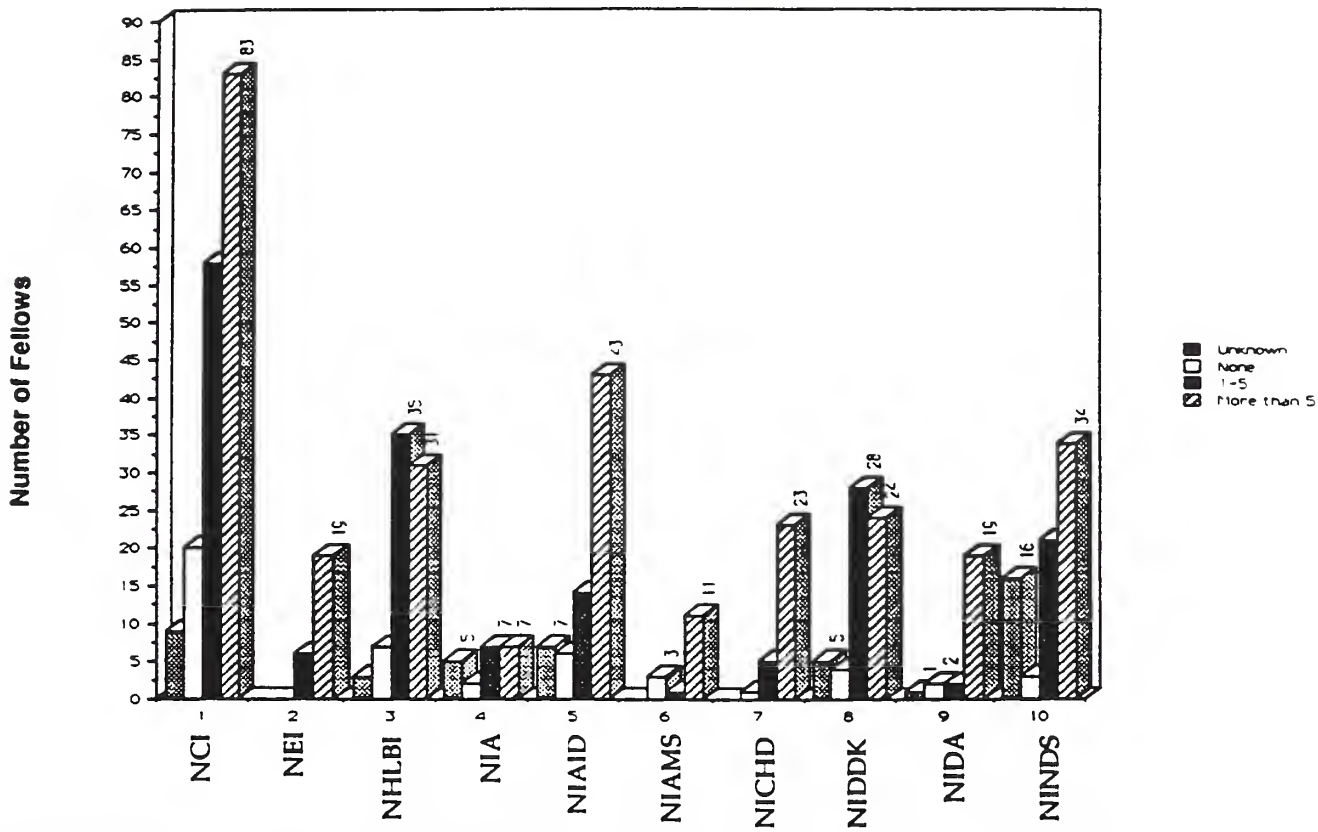
Did you have a pe-employment interview?[44]

INSTITUTE	No Response or No Recall	NO	YES	Totals
NCI	5	10	31	46
NEI	1	2	2	5
NHLBI	2	7	2	11
NIA	2	4	2	8
NIAID	2	2	21	25
NIAMS	1	1	1	3
NIDDK	7	2	10	19
NIDR	0	1	5	6
NICHD	1	1	6	8
NINDS	1	2	10	13
NIEHS	3	17	13	33
Totals	25	49	103	177
GROUPS				
Non-minority	20	37	77	134
Minorities				
Black	4	12	22	38
Hispanic	1	0	4	5
Native American	0	0	0	0
Minorities	5	12	26	43
Non-minorities	20	37	77	134
Totals	25	49	103	177
Percent	14	27	70	100

[44] One respondent did not answer all of the questions.

TABLE III.3

Number of Articles Published By NIH Service Fellows
Prior to NIH Employment

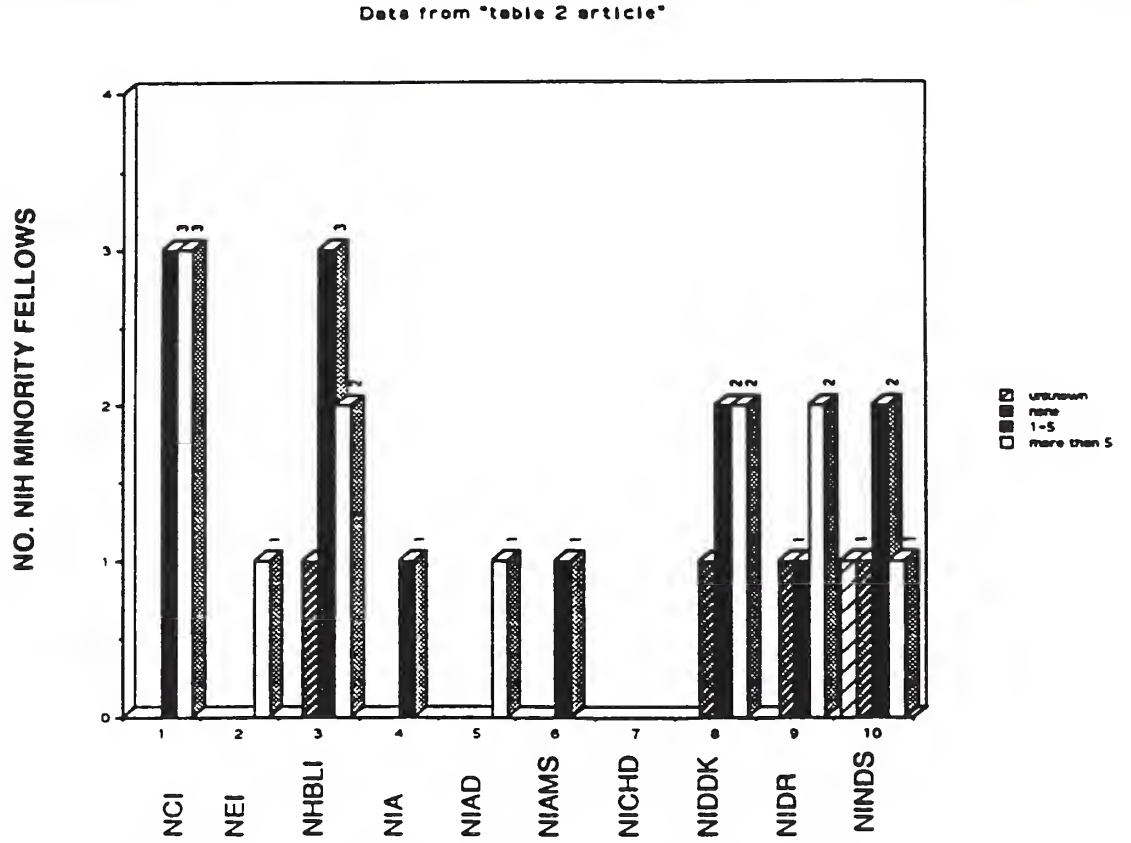


	NCI	NEI	NHLBI	NIA	NIAID	NIAMS	NICHD	NIDDK	NIDA	NINDS
Unknown	9	0	3	5	7	0	0	5	1	16
None	20	0	7	2	6	3	1	4	2	3
1-5	58	6	35	7	14	1	5	28	2	21
More than 5	83	19	31	7	43	11	23	24	19	34

Table reads as follows:
83 Services Fellows at NCI have published more than 5 publications;58 have published 1-5.

TABLE III.4

NUMBER OF ARTICLES PUBLISHED BY MINORITY SERVICE FELLOWS PRIOR TO EMPLOYMENT AT NIH INSTITUTES



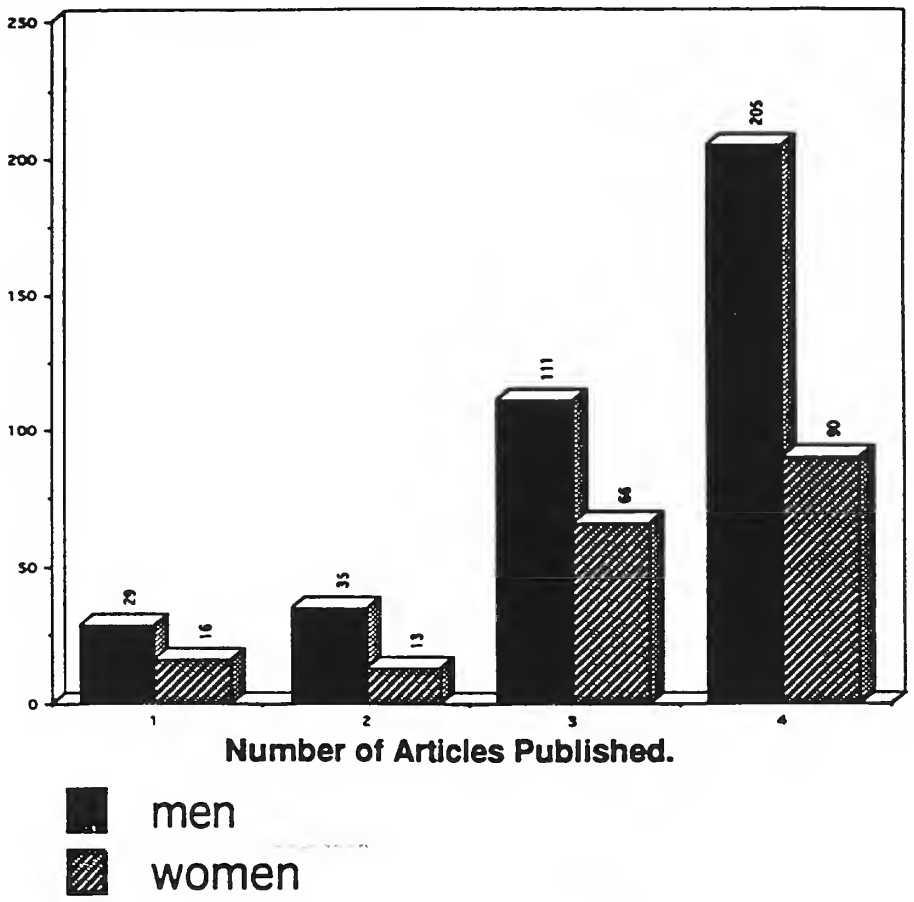
Unkown	0	0	0	0	0	0	0	0	0	1
None	0	0	1	0	0	0	0	1	1	1
1-5	3	0	3	1	0	1	0	2	1	2
More than 5	3	1	2	0	1	0	0	2	2	1

Number of Publications Published

Table III.5

NUMBER OF ARTICLES PUBLISHED BY NIH SERVICE FELLOWS

By Gender Article published prior to NIH employment



Number of Articles Published with Percent of Total

Sex	Row 1 Unknown	Row 2 None	Row 3 1-5	Row 4 More than 5
Male	29, or 5%	35, or 6%	111, or 20%	205, or 36%
Female	16, or 3%	13, or 2%	66, or 12%	90, or 16%

Chart reads, 205 male service fellows, or 36% of the total, publised more than 5 articles prior to NIH employment.

CHAPTER IV. EXTENSIONS, PROMOTIONS, AND CONVERSIONS TO TENURED STAFF

This Chapter describes the NIH guidelines and procedures for the extension, promotion, retention and conversion of participants in the Staff Fellowship Program. It also discusses possible obstacles for the conversion of minority fellows.

Extensions and Promotions

The NIH provides general guidelines concerning extensions and promotions of SFP participants. NIH policies define the number of extensions, or years of research allowed under the SFP. The initial duration of fellowships vary between one and three years, while extensions up to a maximum of seven years may occur.

No guidelines address who should be eligible for retention through the extension of a staff fellowship if a service fellow has been in the SFP less than five years. For extensions into a sixth or seventh year, the NIH manual states that such extensions may be requested only for one or two reasons:

1) To adequately evaluate those fellows who are being considered for conversions to tenured staff.

2) To allow service fellows a terminal year in which to search for employment elsewhere.

The term extension, as it is used in this report, means the continuation of a service fellow's assignment on the same project, or in the same laboratory beyond the initial appointment period.

Retention through promotion can be accomplished in one of two ways:

1) Promotion from staff fellow, medical staff fellow, epidemiological staff fellow, or the Pharmacology Research Associates Training (PRAT) Program to senior staff fellow.

2) Promotion by grade or assignment within the PHS Commissioned Corps. Promotion to a permanent position and conversion to a tenured staff position is discussed later in this chapter.

Promotion to senior staff fellow may be authorized only for staff fellows who have had at least three years of post-doctoral training. Although it is not specifically covered in the NIH guidelines, promotions in the SFP may result from excellent performance evaluations over time.

NIH manual states that supervisors of staff fellows should evaluate the fellows' achievements and potentials, and that annual written evaluations of the fellows should be provided to the scientific director of the institute or division. The guidelines state, but do not require, that recommendations for extensions and stipend increases be included as part of the written evaluations. In addition, the guidelines state, but do not require, that supervisors have periodic discussions with the service fellows about their research achievements and potential for further development.[1]

Observations on the Extension and Promotion Process

Performance evaluations are seldom given or discussed with service fellows. In general, service fellows have stated that no formal appraisal of how their supervisors fell about their work and about them personally due to weekly or monthly informal interactions. By contrast, SFP participants in the Commissioned Corps receive annual written evaluations after the first year.

Most service fellows said they were uncertain about their future prospects in their present laboratory due to the lack of a formal evaluation process. They cited, as an example, feeling that they no longer had jobs, because notifications of their extensions sometimes were received long after notification due dates.

Extensions - Extensions into the third year occur quite frequently in the SFP and, in many cases, the initial commitment or expected duration of the fellowship is three years. According to the surveyed laboratory chiefs, service fellows tend to remain in their post for about three years. Some laboratories have a policy of keeping their SFP participants as long as they will stay, particularly when the service fellows already have been told of the unlikelyhood of any tenured staff positions becoming available. Other laboratories use the end of a two or three-year SFP commitment to bring in new service fellows.

The tendency is for the turnover rate to be moderately high.[2] For example, among the 185 staff fellows who were in the SFP in October, 1990, one-third had started their appointments in 1988 or earlier. Five staff fellows were in the SFP before 1986. Forty-nine percent of the 393 senior staff fellows had started their appointments in 1987 or earlier. Nine percent were in SFP appointments before 1985.

Most Black and Hispanic researchers in the SFP entered the program after 1986. Some of these scientists were guest or participants in other NIH intramural programs. Interviews with minority scientists indicated that eight of the 33 minority SFP service fellows, 24 percent, have been at the NIH for more than four years. Eleven, or 33 percent had other NIH fellowships before entering the SFP.

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[1]NIH Manual, Chapter 2300-320-1, pp- 17-18.

[2]Calculating the average length of stay for service fellows is difficult. Attempts to do so would be complicated by the fact that: 1) many of the resignations on the records are actually technical notations for service fellows' transferring into the Commissioned Corps system or switching into non-SFP fellowship programs; 2) transfers across institutes would be figured into the total years of fellowship duration; and, 3) no information is available concerning the non-SFP years that former (resigned) SFP participants spent in their laboratories.

Promotions into senior staff fellowships are not automatic after a fellow has had three years of post-doctoral training at an institute. Among most of the laboratory chiefs who discussed promotion of service fellows, the prevailing notion was that promoting to senior staff fellow is placing the trainee on a path towards tenure, and hence, some early considerations of the staff fellow's future career must be made at that time. One laboratory chief stated that senior staff fellows are tenure-track scientists, and for that reason, only new talent from another research center would be brought into the laboratory as senior staff fellows. Several chiefs took exception to this idea, saying that the promotion was just a step to indicate a staff fellow's degree of independence in research activities.

Promotions by Institute - The pool of available senior staff fellows trend in promotions indicates that many more service fellows are promoted to senior staff fellows than the institute will likely consider for tenured positions.

The recentness of appointments of the current minority service fellows may imply that the opportunities for promotions of minorities will be greater in future years. An interesting factor is the probable path of minority researchers, once they begin to work at the NIH. For example, Black researchers who are now in senior staff fellowship positions were recruited into the SFP from other research centers or from other NIH intramural programs. The extent to which Blacks and Hispanics remain in other NIH programs longer than other service fellows has not been assessed.

Commissioned Corps Appointments - No database was prepared and no analysis was performed concerning the extensions or promotions of SFP participants who had transferred into the PHS Commissioned Corps. On the personnel data records (longitudinal or history file), the Commissioned Corps clinical associates and research associates who are SFP fellows show as former fellows who have resigned from the SFP.[3]

Conversions to Tenured Staff

Guidelines for Conversions

No specific PHS regulations govern the procedures for conversion to tenured staff. The NIH policies for conversion must be among the SFP components that are reviewed periodically by the Office of the Assistant Secretary of Health. The NIH Board of Scientific Directors sets the guidelines for preparing a consideration for conversion.

NIH policy requires supervisors to initiate the conversion process. When a supervisor believes that a service fellow has the potential for becoming a tenured scientist, the supervisor recommends the fellow for conversion to permanent appointment.

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[3]In addition, most of the official personnel folders for the Commissioned Corps officers are archives, so that the same comprehensive information that was collected for civil service fellows could not readily be obtained for Corps participants.

Supervisors and laboratory chiefs decide who should be considered for tenure. While the criteria used are similar across institutes, they are not consistently and uniformly applied to all service fellows through NIH institutes, within ICD's and within laboratories. Criteria for conversion that may be important to the governing Board of Scientific Directors, may not be important to laboratory chiefs and supervisors.

The attitudes, beliefs, backgrounds and behaviors of laboratory chiefs and supervisors may be barriers to conversion of Black, Hispanic, and female scientists.

The perceptions of the laboratory chiefs and supervisors, many of whom indicated that they believed minority scientists were not well trained, or that their basic education - regardless of institution - may have been inferior to that required of NIH researchers, are strong attitudinal biases that may well affect the conversion process for minority scientists.

This conversion process involves:

1) requesting consideration and endorsement from an institute's scientific director.

2) completing a review and endorsement of the fellow's conversion by an institute's Tenure Committee.

3) preparation of a conversion packet with credentials and information supporting the candidate's conversion.

4) requesting endorsement from the NIH Board of Scientific Directors.

The guidelines state that only those staff fellows and senior staff fellows whose performance evaluations show high potential for achievement as independent investigators may be considered for conversion. The guidelines also recommend that a minimum of two years of professional research experience at the NIH be required for consideration to conversion. If a service fellow's research activities evolve to include responsibility for supervision or program leadership, such as that performed by a section chief, NIH policy requires that the fellow's supervisor consider initiating a recommendation for conversion.

Conversion to tenure is the highest promotion available through the Staff Fellowship Program. It is a complex procedure that the NIH has tried to make as uniform as possible across institutes. NIH guidelines for conversion were written essentially by the Board of Scientific Directors, thereby giving each institute some influence in setting agency-wide policies.

Number of Conversions

184 SFP participants have been converted to tenured staff from 1982 to 1989 (see Table IV.1). 165 of the 184 were White or 88.7 percent. Fifteen or 8.1 percent were Asian. Two, or one percent were Black. Two, or one percent were Hispanic. For the period 1982-1987, 84 of 126 conversions were White males.

Personnel records indicate that about 2,700 SFP participants either were already in the SFP or were admitted into the program during the same period. This is a conversion rate of 6.5 percent.[4] At the same time, about 93 Black scientists were enrolled in the SFP, and the two conversions among them would indicate a conversion rate of 2.2 percent. Of the 43 Hispanic scientists who were enrolled during the same period, the two tenured scientists show a conversion rate of 4.7 percent.

In 1990, evidence was available to suggest that two Black scientists (men) were being converted to tenured staff positions. No information was available concerning the possible tenure considerations of other under-represented minorities.

There are other conversion ratios that are possible for comparison. We can develop a percentage of those converted by race and national origin as a ratio to their total in-service fellowship population. For instance, there are a total of 755 White service fellows. From 1984-1990, 165 White service fellows were converted to tenured position, therefore the conversion rate for White service fellows is 165/755, or 220 percent. Similarly, for Asians, 11/97, or 11.3 percent; Blacks, 2/33, or 6.0 percent; Hispanics, 2/17, or 11.8 percent.

These ratios change drastically when examined as a ratio of the entire population of service fellows, which is 900. Again, Whites, 152/900, or 17 percent; Asians, 11/900, or one percent; Blacks, 2/900 or .22 percent; and Hispanics, 2/900, or .22 percent. These small ratios attest to both the small numbers of minority fellows and the small numbers of those who have converted to tenured positions.

Conversion Criteria by Institute

Conversion criteria, beyond those specified in the guidelines, were not easily discernible at the institute level. Twenty-nine of the 64 surveyed laboratory chiefs discussed with the project staff the criteria they use when considering service fellows for conversion to tenured staff. The chiefs also indicated their thoughts on the most important of those criteria.

1) An institute must have an available slot for permanent staff.

2) The candidate must have shown that he or she is an independent researcher.

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[4]A true conversion rate would be derived from using as a divisor only the number in the cohort group of those persons entering at the same time as the converted service fellow.

Beyond these factors, 11 laboratory chiefs said it was important that a candidate have developed new expertise while in the position. Nine of the chiefs want candidates for conversions to have a large number of "quality" publications in the major journals published in their fields. Two of the chiefs said that only those persons who had initially received training in another research center would likely be considered for permanent positions (See Table IV.1).[5]

Other Issues Concerning Conversions

All of the laboratory chiefs said that they explained at the very beginning of a service fellow's appointment that there were no guarantees for tenure. Some service fellows believe that more information (and preparation) about tenure is given to those individuals considered to be on "tenure track". This includes promotion to senior staff fellow.

Service fellows said that they had seldom had any discussion of tenure with their laboratory chiefs.

Conversions

The process of converting service fellows to tenured positions upon a service fellow's ability to meet the demands of his, or her direct supervisors and the standards of the governing Board of Scientific Directors. The criteria used by the laboratory chiefs may not be what the board is looking for when granting tenure. Service fellows, particularly minorities and women, need to be aware of what both reviewers are looking for well in advance of the date of their conversion. Service fellows should familiarize themselves with the details of what their supervisors are looking for and what the board looks for in successful applicants for tenure.

Minorities and women need to develop additional contacts with researchers who have successfully negotiated the tenure process, so that they can get a realistic and timely appraisal of what they will need to do to be successful.

Minority researchers and women, may have additional attitudinal barriers to overcome to successfully negotiate the conversion process because of biases some laboratory chiefs and supervisory scientists may have.

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[5]Some anecdotal evidence suggests that other criteria are more important than the others in the minds of the Tenure Committees and the Board of scientific directors. For example, several laboratory chiefs and service fellows talked about a number of women in their laboratories who were considered but rejected for tenure because the candidates were not deemed to be sufficiently independent of their supervisors.

One of the suggested reasons for the tenure dispositions, some of which went all the way to the Board of Scientific Directors before rejection, was that too many of the published papers had the supervisors name on them as a co-author. Another complaint was that the candidate's skills were too much like other members of the permanent staff. A few of the service fellows complained that only physician-scientists would likely be considered for tenure in their laboratories, either because the chief was a physician or the "NIH is no place for Ph.D researchers".

Some problems to consider include, some fellows may not be prepared for conversion, because laboratory chiefs do not usually discuss tenure possibilities with service fellows. If this is the case, the service fellows may well want to make a list of appropriate questions for his supervisor and others, well in advance of his, or her conversion date. Other problems that may occur, include an insufficient number of publications, or publications that appear in the wrong professional journals. Also, having collaborated many times with a laboratory chief may win the chief's approval for a candidate. However, it may not impress the governing Board of Scientific Directors.

CHAPTER IV - TABLES

TABLE IV.1

CONVERSIONS OF SERVICE FELLOWS TO PERMANENT POSITIONS
FROM 1982 TO 1989, BY RNO AND SEX

1982-1987 CONVERSIONS: RNO, SEX	NUMBER	PERCENT
WHITE		
MALE	84	66.7
FEMALE	35	27.8
ASIAN		
MALE	3	2.4
FEMALE	4	3.2
BLACK		
MALE	0	0.0
FEMALE	0	0.0
HISPANIC		
MALE	0	0.0
FEMALE	0	0.0
NATIVE AMERICAN		
MALE	0	0.0
FEMALE	0	0.0
TOTAL	126	100.0

1988-1989 CONVERSIONS: RNO,SEX	NUMBER	PERCENT
WHITE		
MALE	35	60.9
FEMALE	11	18.7
ASIAN		
MALE	1	1.7
FEMALE	7	11.9
BALCK		
MALE	0	0.0
FEMALE	2	3.4
HISPANIC		
MALE	1	1.7
FEMALE	1	1.7
NATIVE AMERICAN		
MALE	0	0.0
FEMALE	0	0.0
TOTAL	60	100.0

1982-1989 TOTALS	PERCENT
WHITE	
MALE	119	65.2
FEMALE	46	24.7
ASIAN	
MALE	4	2.2
FEMALE	11	5.9
BLACK	
MALE	0	0.0
FEMALE	2	1.0
HISPANIC	
MALE	1	0.5
FEMALE	1	0.5
NATIVE AMERICAN	
MALE	0	0.0
FEMALE	0	0.0
TOTAL	184	100.0

CHAPTER V. COMPENSATION

Compensation of Service Fellows

For the performance of their duties at the NIH, SFP participants receive fellowship stipends. The stipend payments are made at regular bi-weekly intervals and paid through the NIH employee payroll system. The initial compensation level is based upon a set of annual stipend ranges, which are closely linked to the civil-service pay scales. Clinical associates and research associates who serve in the Commissioned Officers Corps receive compensation based on military wage scale.

Compensation Guidelines

The NIH Manual, Chapter 2300-320-1, as revised for 1990, contains the set of guidelines that NIH employers of staff fellows are expected to follow. This includes:

- Initial Stipends
- Annual Stipend Increases
- Stipend Levels After Promotions[1]

NIH Manual, Chapter 2300-320-6 gives similar guidelines for the compensation paid to clinical associates and research associates who are considered staff fellow.[2] Pay guidelines for PHS Commissioned Officers are described in several Department memoranda, including the Pay and Allowances document contained in Appendix D.

Pay Ranges for Service Fellows

Pay for the SFP participants is established through stipend ranges that are determined by NIH-wide policies. Ranges for the initial stipends are set annually; for staff fellows and senior staff fellows, PRAT fellows and epidemiology staff fellows. These ranges are adjusted upward by NIH policy for staff fellows and senior staff fellows holding M.D. degrees and for medical staff fellows.

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[1]The NIH Manual, Chapter 2300-320-1, Sections F,J, and L, and Appendices 4 and 6 describe the guidelines for compensation paid to staff fellows.

[2]See Section G of the NIH Manual Chapter 2300-320-6.

The 1990 schedule of initial stipend limits are:

a. $24,000 to $41,000 for staff fellows

b. $28,000 to $54,000 for senior staff fellows

c. $39,000 to $41,000 depending upon the starting year, for medical staff fellow clinical associates and research associates.[3]

Commissioned Corps Appointments

Service fellows appointed to the Public Heath Service Commissioned Corns, are paid according to PHS regulations. Compensation rates are equivalent to military pay scales. All personnel of the same pay grade receive the same basic pay and allowance. However, additional pay is granted to those with dependents and special qualifications, like medical board certification.

Stipend Ranges and Initial Stipends

The NIH Manual guidelines stipulate the manner in which stipend ranges should be set. Scientific Directors determine the stipend ranges from which the initial stipend setting for a service fellow must come. The Board of Scientific Directors reviews periodically the pattern of stipend ranges and recommends to the Director of the NIH any adjustments that would align the stipends more closely with the salaries of comparable General Schedule (GS) and Commissioned Corps appointments. For example, in a particular year, the Board may issue memoranda containing approved changes in the stipend ranges, such as increasing the lower and upper stipend levels. In addition, the Director of the NIH may approve across-the-board automatic increases in stipends paid to the service fellows.

[3]Actual compensation paid is determined by the hiring laboratory or branch chief. Inflationary adjustments and merit-pay increases may be given to staff fellows and senior staff fellows each year. Medical staff fellows receive increments of $2,000 per year. Exceptions to these ranges must be approved by the NIH Director of Intramural Affairs.

Stipend ranges are different for each type of service fellow, or SFP participant. The following are examples of the authorized stipend ranges for 1990:

Staff Fellow (Ph.D.):
$24,000 - $41,795

Senior Staff Fellow (PhD.)
$28,000 - $46,861

Medical Staff Fellow:
First year $37,000
Second year $39,000
Third year $41,000

Staff Fellow (M. D.):
$28,000 - $39,426[4]

Senior Staff Fellow (M.D.):
$32,000 - $54,727

The guidelines do not address the issue of determining the initial stipend--that is, the specific stipend amount for a new hire, or for someone promoted into the SFP. A new service fellow may receive an initial stipend that is close to the lower end of the range for his fellowship or a stipend that is closer to the upper level of the stipend range. Each hiring supervisor sets the initial stipend levels for newly employed service fellows, often according to established practices within the hiring institute.

Stipend Increase Practices

Medical staff fellowships have associated stipend levels that do not change during the course of a single year but increase each additional year in the program by $2,000. The stipend increases are effective on the medical staff fellows' anniversary dates. Exceptions to this rule may be approved by the Deputy Director for Intramural Research or the Associate Director for Intramural Affairs.

During the course of a specific individual's staff fellowship in the SFP, he or she may receive two types of stipend increases: merit increases and annual cost-of-living adjustments. Merit increases must be recommended by the staff fellows' supervisors and approved by the scientific directors. When merit increases are awarded, according to the NIH Manual, they should be in amounts of either $500 or $1,000 annually and made to coincide with the staff fellows' anniversary dates. A $500 merit increase can be given if the staff fellow has "achieved to-date the research goals and objectives at the time of appointment or most recent performance review." A merit increase of $1,000 is given if the Staff fellow has "significantly achieved to date the research goals and objectives...[5] According to DPM staff, however, the $500 and $1,000 increments have been adjusted upward in recent years, to amounts of $1,000 and $1,500, respectively. Stipend adjustments larger than $1,500 must be recommended in writing by the supervisor and approved by the NIH Deputy Director for Intramural Research.

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[4]The upper limit on this pay range is correct, but it is lower according to the usual policy established each year by the Board of Scientific Directors.

[5]For the complete specification, see the NIH Manual Chapter 2300-320-1, 1990 revision, Section F, p.9.

The Director of the NIH may approve annual cost-of-living adjustments to the stipend levels for staff fellowships. When authorized, such stipend increases are across-the-board percentage adjustments that are comparable to adjustments made for GS employees and are provided at the same time as the adjustments are made for GS employees. These increases are made in addition to merit increases.

Stipend Increases Resulting From SFP Promotions

A promotion from staff fellow to senior staff fellow must be accompanied by a stipend increase that will place the new stipend level at or above the minimum stipend level for senior staff fellows. Scientific Directors may authorize such changes in stipends, but written requests to the Deputy Director for Intramural Research must be made if the requested stipend increases are greater than $1,500 and will exceed the minimum level for senior staff fellowships. For example, upon the recommendation of the supervisor, the Scientific Director for the institute can authorize either a $3,000 or $1,000 increase in a staff fellow's 1990 stipend of $25,000 or $27,000, respectively, yielding a $28,000 stipend for the fellows promotion to senior staff fellow. A recommended increase of $5,000 or $3,000 to bring the stipend upon promotion to $30,000, however, would require a written request to and the approval of the Deputy Director for Intramural Research or the Associate Director of Intramural Affairs.

No special bonuses can be paid to SFP participants and no additional comparability pay increases to physicians are allowed. Regardless of the latter constraint, however, the upper level of the stipend range is higher for senior staff fellows who are physicians than for other senior staff fellows.

Compensation Practices Across and Within Institutes

To a large extent, the different institutes of the NIH adhere to similar policies and practices regarding compensation for service fellows. General policies for compensating SFP fellows are established at each institute by the scientific director for intramural research. These policies usually require that the actual practices of setting initial stipends and stipend increases fall within the NIH guidelines for compensation discussed above. Stipend increases of $1,500 were found to be awarded routinely during 1990 in most of the institutes, however, and stipend increases below that amount were seldom given. Instead of being an exception to the guidelines, the usual stipend increases may have been dictated by internal policy at each institute.[6]

Laboratory chiefs have great flexibility in setting the initial stipend amounts for service fellows. They may choose to reward additional years of post-doctoral training. Other than requiring different stipend ranges by fellowship categories, no uniform criteria exists within the institutes for the setting of initial stipends for staff fellows and senior staff fellows.

[6] Although the median stipend level is specified for the staff fellows, most institutes have three or fewer minority staff fellows and hence only one stipend may represent the stipend level for minority staff fellows in an institute.

There is also a guideline that an initial stipend should not severely reduce the payment level received by an individual service fellow at his last post-doctoral appointment. Setting the initial stipend based on this latter reasoning, for example, could allow a staff fellow with two years of post-doctoral training at another research center to receive $3,000 more in the initial stipend award than a staff fellow might receive if he has had two previous years of post-doctoral training in a NIH laboratory.

In about one-half of the institutes, compensation above the guidelines for stipend ranges was paid quite often to service fellows in 1990. This practice is allowed by the NIH guidelines. First of all, the stipend ranges are definitive limits for only the initial compensation. Moreover, special requests to the Deputy Director for Intramural Research would perm;it the setting of stipends outside the ranges initially or permit stipend increases higher than $1,000 or $1,500 annually. In addition, when initial stipends are set high, increases of $1,500 or less could place fellows' stipends automatically outside the relevant range in just a few years, and no specific rules would be violated.

Current Compensation Levels

Differences across institutes occur with regard to the average level of stipends awarded to service fellows. Instances of very high stipend levels tend to be found at the larger institutes, including the NCI, NHLBI, and NIAID.

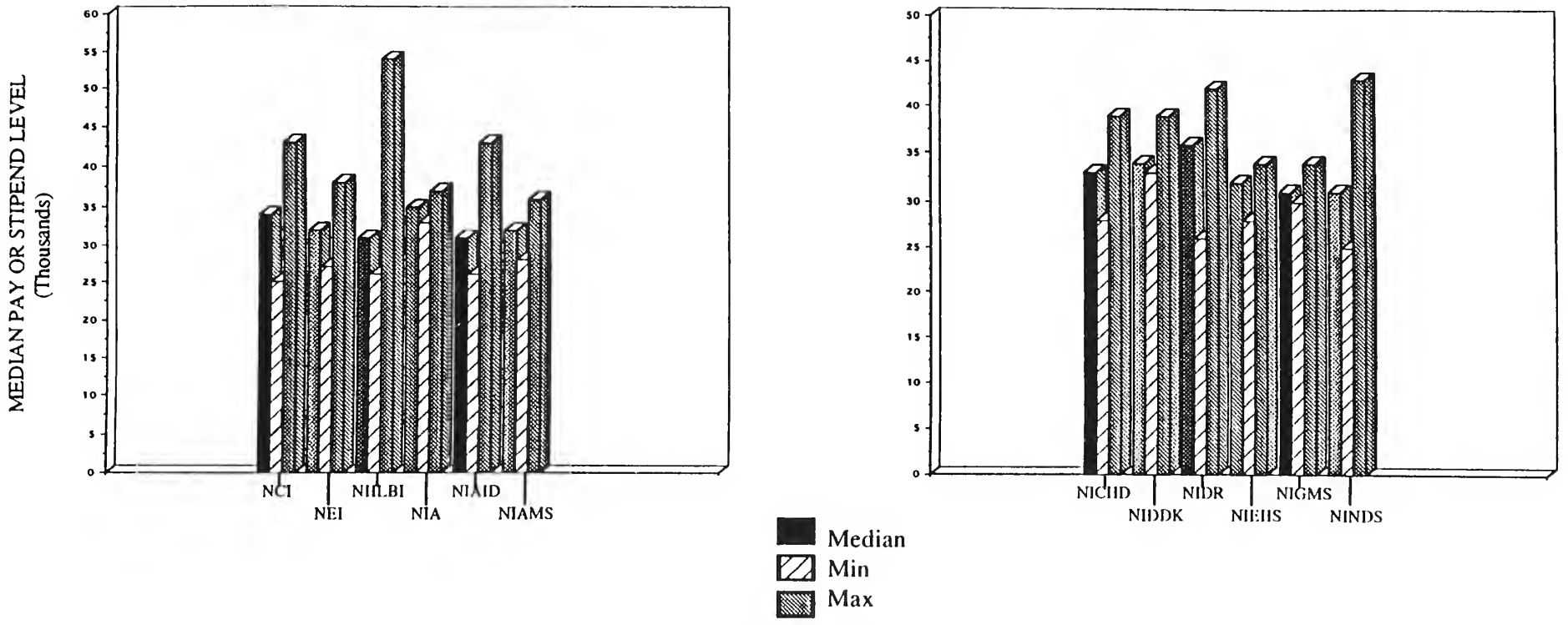
Stipend levels for medical staff fellow with civil service appointments show the least amount of variation among stipend awards. Service fellows at the larger institutes benefit from the size of their institutes do for all their current staff fellows. For example, the NIA paid higher stipends generally in 1990, although it had fewer staff fellows than most other institutes.

Tables V.1 through V.6 all indicate the variation in stipends paid to service fellows at the different institutes. The minimum, maximum, and median stipends for each institute's staff fellows are shown in the Table V.3. In 1990, four of the institutes--NCI, NHLBI, NIAID, and NINDS--paid some staff fellows $42,000; such stipends were above the suggested stipend ranges for staff fellows. The NCI and NINDS also paid the lowest stipend levels to some of their staff fellows. Stipends paid to staff fellows in 1990 ranged from $24,864 to $53,300.

The stipend levels for those senior staff fellows who joined the SFP in 1989 or 1990 range from lows of $30,000 paid at the minimum range levels by both the National Cancer Institute and the National Heart, Lung and Blood Institute to a high of $64,052, paid by the National Institute for Allergies and Infectious Diseases, for senior personnel.

CHAPTER V - TABLES

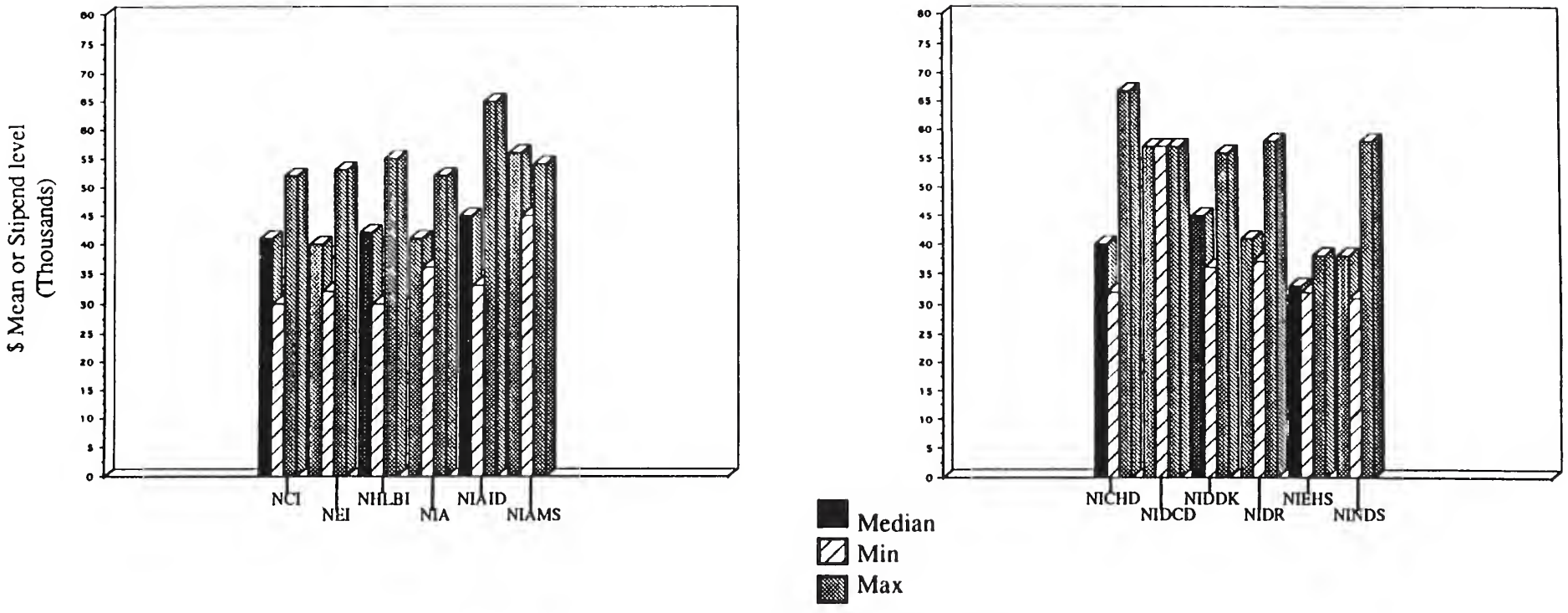
TABLE V.1 STIPEND LEVELS OF STAFF FELLOWS, BY INSTITUTE



Staff Fellows, all years
Salaries of all SFs;

Inst	Numbers	Median	Min	Max
NCI	38	34000	24864	42513
NEI	16	31762	27373	38255
NHLBI	16	30268	25900	53300
NIA	4	34698	33000	37632
NIAID	12	30023	26272	42727
NIAMS	2	31459	27918	35000
NICHD	9	32000	28000	38796
NIDDK	16	33682	31992	38999
NIDR	16	34980	26000	42000
NIEHS	16	31812	28000	33251
NIGMS	8	30526	30008	33116
NINDS	16	30528	24864	43000

TABLE V.2 STIPEND LEVELS OF SENIOR STAFF FELLOWS, BY INSTITUTE



Senior Staff Fellows, EOD/YR 1989 or 90

Institute	Number	Mean	Min	Max
CC	6	45365	43000	46548
NCI	35	40770	30000	51465
NEI	6	40038	31544	52000
NHLBI	14	41844	30000	53300
NIA	8	40985	36000	50904
NIAID	19	43854	33000	64052
NIAMS	3	45600	36000	52800
NICHD	14	39512	32000	55000
NIDCD	1	47084	47084	47084
NIDDK	13	43643	35688	54336
NIDR	5	41152	36260	49000
NIEHS	10	33891	32000	37760
NINDS	19	37553	31000	56980

TABLE V.3 MEDIAN PAY FOR STAFF FELLOWS, BY INSTITUTE AND BY RNO AND SEX

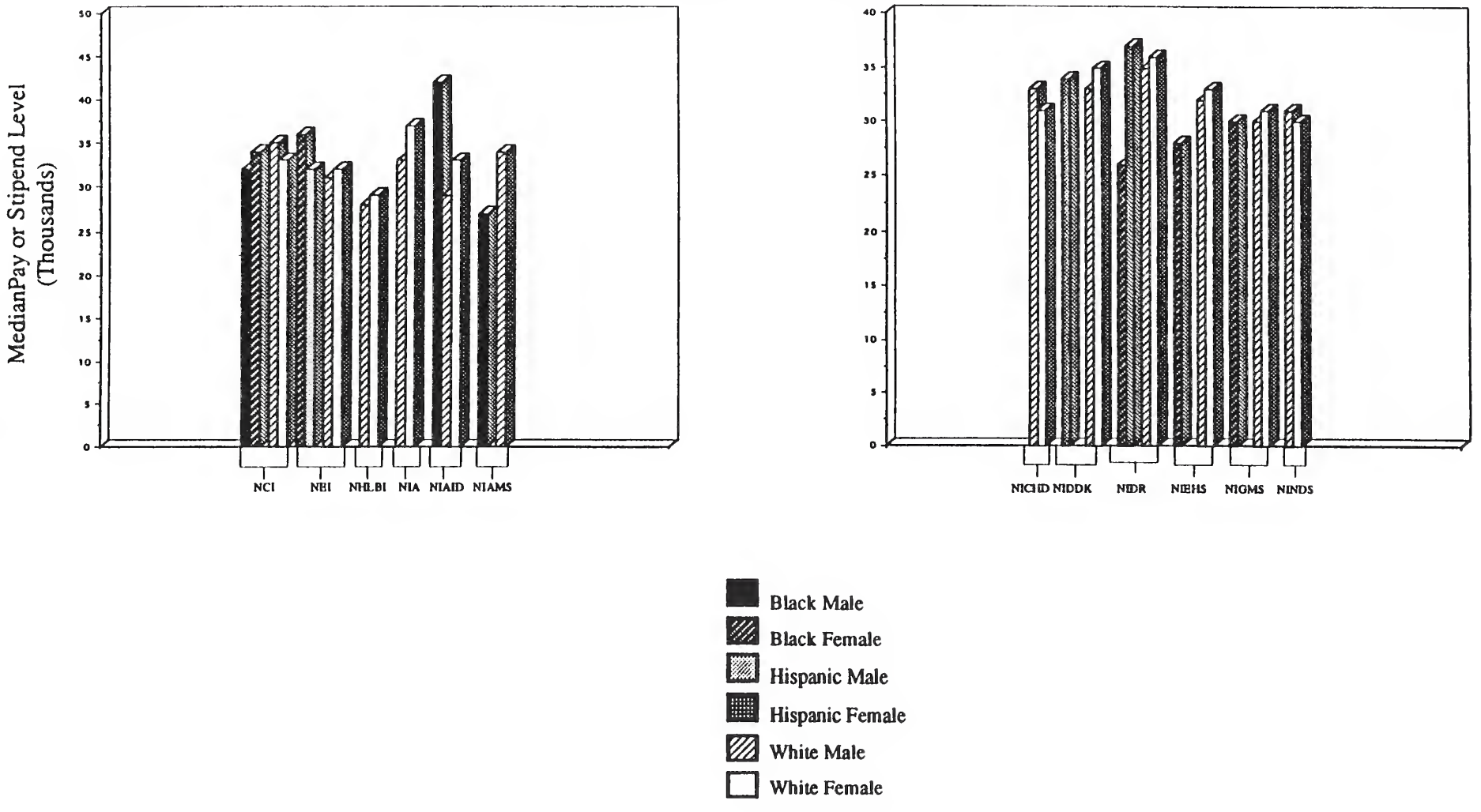


TABLE V. 5 STAFF FELLOW PAY DIFFERENCES

Black/White Pay Ratio

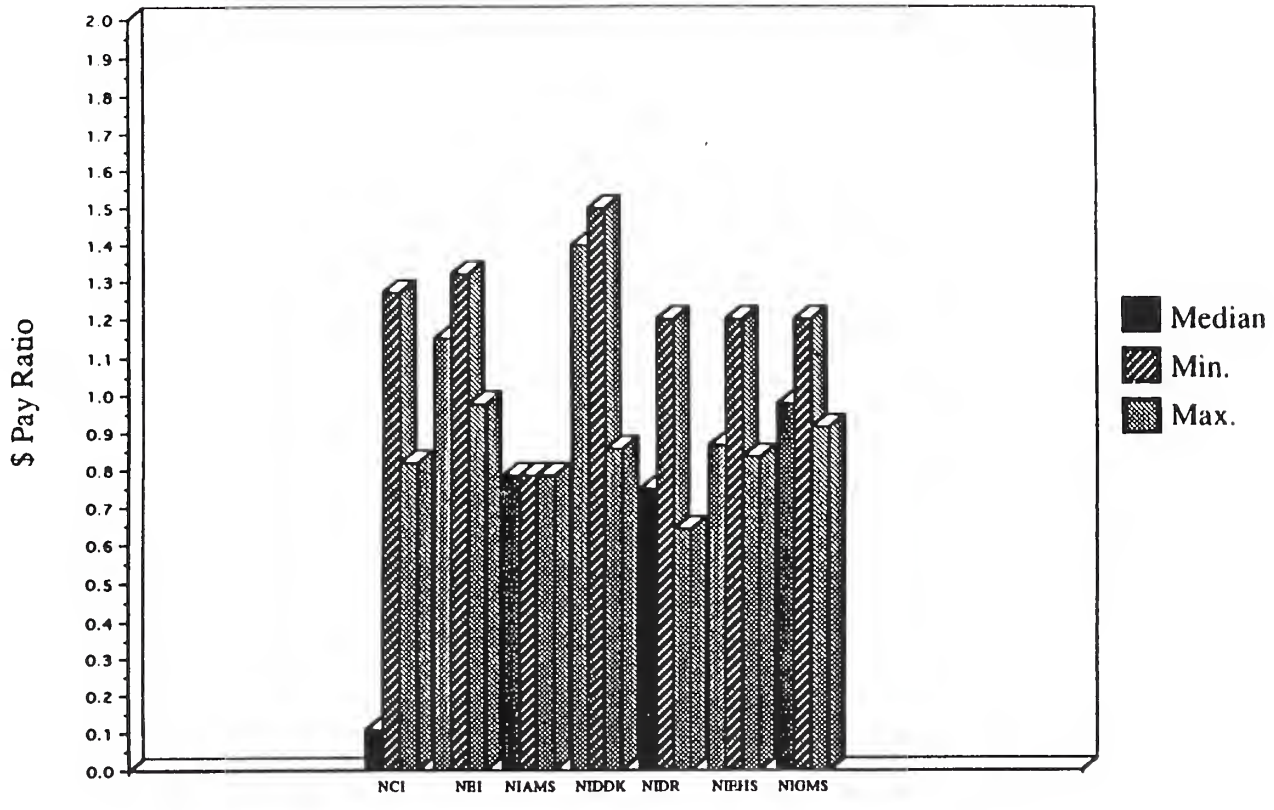
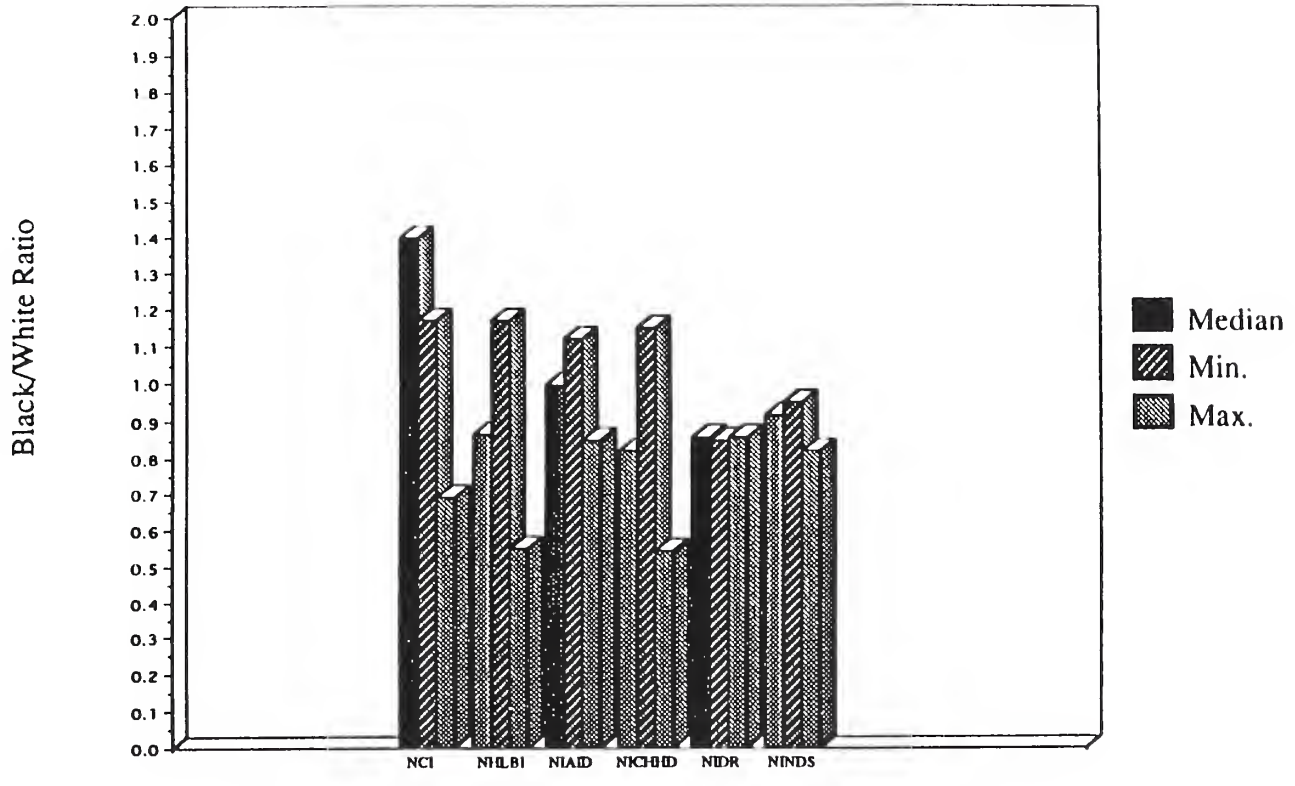


TABLE V.6 COMMISSIONED CORPS OFFICER PAY DIFFERENCES
BY INSTITUTE



CHAPTER VI. SUMMARY OF FINDINGS

Summary of Findings

Structural and attitudinal barriers to the recruitment and retention of Blacks and other minorities among NIH's career researchers present a challenge to the SFP. The lack of targeted recruitment efforts by the laboratory chiefs and the low conversion rates for minority service fellows need serious attention from scientific directors, laboratory chiefs and administrative personnel. Coordinated initiatives need to be developed, not just in individual institutes, but throughout the NIH as well.

The lack of significant recruiting efforts by the primary hiring groups, the laboratory chiefs and the branch chiefs, is probably the greatest barrier to recruitment and retention of minorities throughout the NIH. These obstacles prevent the successful implementation of NIH's Affirmative Action plans and the Federal Equal Opportunity Recruitment Program Plan for the SFP.

Since no records of the number of minority applicants have been kept by NIH officials, there is no organized method of sharing minority applicants across institutes.

A significant number of laboratory chiefs and senior scientists, believe that minority recruiting is not an objective of a scientific research establishment. They do not believe that it is possible, or desirable to target recruitment efforts at minorities. These attitudes are in direct conflict with the policies governing affirmative employment and equal employment opportunity at the NIH.

Another barrier is the routine disregard of an NIH Manual guideline that requests the periodic review of the Staff-Fellow Supply Applicant File and the inter-institute referral of applications received. Neither the laboratory chiefs nor the Personnel officers used the File as a source of candidates for SFP selections. This situation places the burden of exposure to NIH on the promising young scientists who may require the intervention of mentors or friends to obtain interviews at prospective laboratories.

The general experience level of SFP participants, who often have one or two year post-doctoral training before coming to the NIH, makes it unlikely that many inexperienced researchers will be selected for SFP post-doctoral fellowships. A significant number of the surveyed laboratory chiefs indicated that they seek candidates with previous years of post-doctoral experience and several major publications. Although minority scientists now in the SFP had those qualifications when they were selected, it is the exception rather than the rule for SFP candidates who have recently graduated. Almost all of the laboratory chiefs reported the use of other NIH intramural programs for hiring post-doctoral fellows, and a few chiefs suggested that the other programs, such as the IRTA and NRSA programs, be used for training those graduates with no previous post-doctoral training. The benefits and remuneration from these programs is less than the SFP.

4. Over 65 percent of the service fellows surveyed were either self-referred, or self marketed, meaning that they found their current position, largely as a result of their own efforts. They may have interacted eventually, with either the informal, or the formal recruitment networks, but they established direct contacts with their laboratories through phone calls, letters or walk-ins for impromptu interviews. In addition, they responded to an advertisement or had their own names listed on a published job-applicant roster and followed-up to get their first interview.

5. A significant number of minority scientists, 34 percent, participated in other NIH fellowship programs, such as the IRTA and NRSA programs, before starting in the SFP.

Selection of SFP Participants

1. Selection for SFP positions are largely left up to the hiring laboratory chief.

2. Laboratory chiefs and personnel officers do not adhere to NIH policy regarding the periodic checking of Staff-Fellow Applicant Supply Files, which are maintained for at least four months after applications are received by the NIH. The NIH Manual (Chapter 2300-320-1) states that the Applicant Supply File should be checked whenever an SFP opening is available. It is unlikely that unsolicited applications that are received directly by one institute are referred to another, or to the Staff-Fellow Applicant File for subsequent review by other institutes.

3. Inconsistent selection criteria are used between institutes to hire SFP researchers. Laboratory chiefs use their own standards to hire personnel. These standards are often not written standards but a combination of the laboratory chief's subjective evaluations of candidates' post doctoral experience, technical expertise, curriculum vitae, publications list, personal references, etc.

4. Approximately 70 percent (89) of all the surveyed SFP participants said that they had been interviewed before they were selected for the SFP fellowships. A smaller number of both staff fellows and senior staff fellows--or, about 20 percent of all service fellows interviewed--reported that they gave seminars during the selection process.

5. While EEO and personnel officers at the NIH have made a positive impact on the hiring of technical personnel, they are not yet a part of the informal scientific network that takes job referrals on a continuous basis.

6. It is clear that there is a different perception on hiring practices between the laboratory chiefs and service fellows. Continuous dialogue should be developed between the two, which should within a short time eliminate those differences and help standardize their hiring practices.

3. In several institutes, the pay levels of some black men and women are well below the median stipend levels of white men in the SFP. The higher pay for white men may reflect both more pre-NIH training than blacks and more negotiation of pay levels within the institutes. Blacks also cluster somewhat within lower paying institutes and may have more difficulty overcoming objections concerning both the value of their research and their prior educational training.

CHAPTER VII. RECOMMENDATIONS

Several changes in the operation of the NIH Staff Fellowship Program (SFP) could improve the recruitment and retention of black scientists and other minorities in the intramural program. This section of the report is devoted to those changes. In addition, some suggestions for SFP improvements were volunteered during the many interviews with NIH officials and service follows. Those frequently cited improvements have been added to the list of recommendations.

1. RECRUITMENT

a. Conduct an annual NIH-wide minority recruitment conference for institute directors, laboratory chiefs and senior scientists. This conference should include the deans, administrators and faculty members from minority and majority biomedical graduate populations. It should also include relevant representation from minority and majority scientific associations with an interest in expanding the base of minorities in the biomedical sciences. EEO officers, directors and the director of the NIH-Extramural program should also be invited. One of the primary objectives of this conferences will be to add to the informal network of contacts those sources who can refer qualified minority candidates to SFP. The scientists from recommendation number two should also be invited.

b. The SFP and other relevant NIH programs should call a meeting of their own minority alumni. These alumni, who may now work at universities, or in the private sector, can form an additional referral source for qualified minority candidates.

c. Publish a minority recruitment resource packet that can be used for all NIH institutes.

d. Establish minority recruitment as a performance element in the manager's performance criteria. Performance goals and targets should be set at the beginning of the year for NIH institutes, laboratory chiefs and other personnel with hiring authority. If positions become open and minority personnel are not actively recruited, this should reflect in performance reviews.

e. Establish a centralized, minority recruitment candidate information data base. This should be comprised of resumes, curriculum vitae and other relevant career planning information for minority candidates.

j. It is clear that a marketing effort needs to be conducted with senior NIH personnel concerning the need to develop additional minority outreach efforts. Directors and senior level scientists should not have to rely on their own abilities to find qualified minority candidates.

k. The Office of Technical Assessment notes, "...increasing attention should be paid to those groups with historically low participation rates in science and engineering, such as women and some minorities. The increasing fraction of college students that will be drawn from the black and Hispanic populations...imply that programs aimed at increasing the participation of these two minority groups could be an especially important source of new talent."[1]

l. The SFP and other NIH programs need to increase their efforts to assist minority students in entering the traditionally white and male science pipeline. Institutes should develop partnerships with area colleges, universities and public schools. They should also develop cooperative demonstration programs with the private sector and with educational institutions.

2. SELECTION

Several of the institutes need to eliminate both structural and attitudinal barriers to the selection of minority candidates for the SFP. Recommendations include the following:

a. Initiate a plan for monitoring the Staff Fellow Applicant Supply File and other applications across and within institutes. This can be equally shared by senior investigators and other responsible scientists. One or two persons could handle the tasks of circulating applicant folders and returning them to the proper locations.

b. Study the effectiveness of other intramural programs in training post-doctoral fellows to qualify as SFP participants. Some evidence from the Surveyed laboratory chiefs indicates effective use of the IRTA program to train new doctorate recipients in the biomedical and health-related sciences. Selections from these programs after one year of training, may be an appropriate way to obtain good SFP participants. On the other hand, the benefits of being in the SFP, which include NIH employment status, health insurance and sick leave, and usually higher pay levels, should not be denied post-doctoral fellows, while they remain in other fellowships for several years, if they have shown sufficient promise as researchers.

c. The institutes often fund the non-SFP fellowships out of the institutes' discretionary budgets. Institute concerns about budgeting should be resolved very early, perhaps in the first year of training, for all SFP candidates who serve in the laboratories.

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[1]"Demographic Trends and the Scientific and Engineering Work Force, A Technical Memorandum," December, 1985, p.26

d. Hire a compensation and benefits consulting firm to analyze the compensation and benefits packages throughout the NIH.

e. Raise the salaries of Ph.D. post-doctoral fellows to equal the salaries of physician SFP participants without patient care responsibilities. The two groups should be paid comparably for the same laboratory research.

APPENDICES

APPENDIX A. DEFINITION OF TERMS

APPENDIX B. SUMMARIES OF NIH INTRAMURAL PROGRAMS FOR POST-DOCTORAL GRADUATES

APPENDIX C. RECRUITMENT STRATEGIES USED AT NIH

APPENDIX D. PAY LEVELS FOR PHS COMMISSIONED CORPS OFFICERS

APPENDIX E. SELECTION PROFILES OF SFP SERVICE FELLOWS

APPENDIX A. DEFINITIONS OF TERMS

This Appendix defines terms that have been used frequently in the text and that require more lengthy definitions than could be included in the main sections of the report.

DEFINITIONS

1. **Conspicuous Absence** - This term indicates that a group's underrepresentation level in the work force is between zero and 20 percent participation in the civilian labor force. For example, if the participation rate in the civilian labor force is three percent and the NIH work-force percentage is one-half of one percent, then the resulting underrepresentation level would be 16.7 percent (100 times 0.5 divided by 3.0) or conspicuous absence.

2. **Manifest Imbalance** - A work force group's representation is assessed as a manifest imbalance if it is between 25 percent and 75 percent of the group's participation in the labor force.

Labor force participation rates for professional workers in the biomedical and health related sciences and levels GS/GM 13-15 were used in the NIH work-force analyses performed by the NIH's Division of Equal Opportunity (DEO). The estimated participation rates for Blacks and Hispanics among professional workers in the civilian labor force are:

a. From DEO analyses, fiscal year 1990 -

	Totals	Men	Women
Blacks	5.12%	2.33%,	2.79%
Hispanics	3.30%,	2.16%,	1. 14%

b. From the 1989 studies by the National Academy of Sciences (see Biomedical and Behavioral Research Scientists: Their Training and Supply, National Research Council, National Academy of Sciences, 1989, vol. 1, p.48) -

	Totals	Men	Women
Blacks (1987)	3.61%	2.15%	1.46%
Other non-Asian Minorities	3. 57%	2.53%	1.04%

A work-force representation level of 1.6 percent for black scientists would imply a manifest imbalance for the group using either definition a. or b. above, since division by the appropriate rates yield a figure less than 0.75 (or 75, when multiplied by 100). Even a higher score for the total racial/ethnic group could still imply a manifest imbalance for males or females, depending on the distributions of the subgroups of men and women.

3. **Laboratory** - a place equipped for experimental study in a science; a group of such places where studies are conducted in a particular field of research.

4. **Laboratory Chief** - the supervising head of a laboratory or department of laboratories in an institute.

5. **Field of Research** - the scientific area of concentration or focus for groups of investigations and experiments; for example, some areas are biochemistry, molecular biology, immunology, and genetics.

6. **Basic-Science Research** - any investigation or experimentation aimed at the discovery and interpretation or revision of facts, theories, or laws applicable to a specific biomedical or health-related field.

7. **Clinical Research** - a mixture of basic-science research and clinical activities that are applied to a set of patient-care problems; the research usually involves the testing of patients' symptoms, diagnoses, testing of drugs, and experiments with different treatments and therapies.

8. **Tenured Position** - Within the NIH, the term implies an individual's employment in a permanent professional job that has required several years of research training at the doctorate level.

Although a tenured position is generally perceived as the culmination of a NIH post-doctoral fellowship conversion process, some tenured positions are filled through the direct hiring of professional workers, who may or may not have been post-doctoral fellows, into a permanent civil-service job.

APPENDIX B. SUMMARIES OF NIH INTRAMURAL PROGRAMS FOR POST-DOCTORAL GRADUATES

Summaries of both service fellowship programs and non-service fellowship programs are described in this appendix. The discussions are brief selections from the Handbook for the Board of Scientific Counselors, Division of Intramural Research, NIAID for 1989. Additional information on the programs can be found through the references listed below.

- Medical Staff Fellowship Program (Adjunct to the Staff Fellowship Program) NIH Manual, Chapter 2300-320-6
- Epidemiology Training Program (Adjunct), NIH Manual, Chapter 2300-320-1, Appendix 1
- Intramural Research Training Award (IRTA) Program NIH Manual Chapter 2300-320-7
- Visiting Program, NIH Manual, Chapter 2300-320-3

Table 2
Nontenured Intramural Employment

Program Provisions	Staff Fellows/Senior Staff Fellows (Includes PRAT Fellows, Ph.D.)	Clinical Associates Research Associates (formerly Medical Staff Fellows; Includes Dental Staff Fellows, Epidemiology Staff Fellows [M.D.s], and PRAT Pharmacology M.D. Fellows)	Visiting Associates Visiting Scientists	Special Experts (Intramural)
Concepts and Purpose	Provide employment and professional development of promising postdoctoral research scientists	Provide initial employment and research training to junior-level physicians	Provide for an international interchange of scientific information and training	Provide specialized skills, knowledge, and abilities in support of program needs
Nature of Assignments	Perform basic and/or clinical research. May not engage in supervisory or administrative activities	Conduct laboratory research and/or provide patient care supportive of research protocols	Conduct basic and applied research related to health	Undertake new projects/initiatives; advise on restructuring/re-directing programs; develop and/or evaluate new procedures and techniques; train staff; provide critical or scarce expertise
Qualifications	M.D. degree or Ph.D. in biomedical, behavioral, or related science and postdoctoral research experience: 0-3 years for Staff Fellows and 3-7 years for Senior Staff Fellows	M.D. degree plus 2-3 years of graduate medical training	M.D. degree in health sciences and postdoctoral research experience or training: 3 or more years for Visiting Associates and 6 or more years for Visiting Scientists	Scientific or professional expertise at grade GS-13 or above as measured by OPM Handbook X-118

Table 2 (continued)

Program Provisions	Staff Fellows/Senior Staff Fellows (Includes PRAT Fellows, Ph.D.)	Clinical Associates Research Associates (formerly Medical Staff Fellows; Includes Dental Staff Fellows, Epidemiology Staff Fellows [M.D.s], and PRAT Pharmacology M.D. Fellows)	Visiting Associates Visiting Scientists	Special Experts (Intramural)
Duration of Appointment	2-year initial appointment; extension in yearly increments to a maximum of 5 years; sixth and seventh years by exception mechanism	2- to 3-year initial appointment up to a maximum of 3 years	12- to13-month initial appointment; extensions in 1-year increments to a maximum of 4 years	13- to 24-month initial appointment; extensions in 1-year increments to a maximum of 4 years
Authority	42 USC 209(g); 42 CFR, Part 61B, PHS regulations	42 USC 209(g); 42 CFR, Part 61B, PHS regulations	42 USC 209(g); 42 CFR, Part 61B, PHS regulations	42 USC 289, L-8, 285, 287b
NIH Manual Reference	NIH Manual 2300-320-1	NIH Manual 2300-320-6	NIH Manual 2300-320-3	NIH Manual 2300-304-1
Stipend Levels	Staff Fellow (Ph.D.) $24,000 - $40,435 Staff Fellow (M.D.) $28,000 - $38,056 Senior Staff Fellow (Ph.D.): $28,000 - $45,234 Senior Staff Fellow (M.D.): $32,000 - $52,825	$37,000 - First year $39,000 - Second year $41,000 - Third year (Option of appointment in the PHS commissioned corps is also available to become a Clinical, Research, or Staff Associate)	Visiting Associate: $23,846 - $44,957 (GS-9/1 - GS-12/10) Visiting Scientist: $34,580 - $75,500 (GS-12/1 - Pay cap)	Ph.D.: $41,100 - $75,500 (GS-13/1 - Pay cap of the regular General Schedule, rounded to nearest $100) M.D.: $48,200 - $75,500 (GS-13/1 - Pay cap of the Medical Officer Special Salary Schedule, rounded to nearest $100); amount determined by qualifications and current total income

Table 2 (continued)

Program Provisions	Staff Fellows/Senior Staff Fellows (Includes PRAT Fellows, Ph.D.)	Clinical Associates Research Associates (formerly Medical Staff Fellows; Includes Dental Staff Fellows, Epidemiology Staff Fellows [M.D.s], and PRAT Pharmacology M.D. Fellows)	Visiting Associates Visiting Scientists	Special Experts (Intramural)
Annual Increase	$1,000 for achieving research goals; $1,500 for significantly exceeding research goals; increases approved by BID Scientific Director; exception for increase above $1,500 requires approval of Deputy Director for Intramural Research or Associate Director for Intramural Affairs, NIH	$2,000 at the beginning of each additional year	$1,000 for achieving research goals; $1,500 for significantly exceeding research goals; same procedures for increase above $1,500 as outlined for Staff Fellows	Amount equivalent to step increase or promotion at end of each year of service. Amount determined by GS salary-setting procedures
Comparibility Increase	Generally granted across the board to correspond with increase in the General Schedule; requires the approval of the Director, NIH	Generally not authorized	Generally authorized on an individual basis, based on recommendation by supervisor and approval by BID Scientific Director; not authorized for Medical Staff Fellow equivalents	Generally authorized on an individual basis, based on recommendation by supervisor and approval by BID Director

Table 3

Other NIH Nontenured Intramural Employment Programs

Position	Description
Commissioned Officer Time-Limited Public Health Service Appointment (FTE)	Equivalent of Assistant Professor without tenure. Eligibility: 4-7 years postdoctoral. Appointment: 3-7 years.
IPA Guest Researcher (Non-FTE)	Intergovernmental Personnel Agreement. M.D.s or Ph.D.s. Temporary appointment. At least half of salary paid by sponsoring university or institution.

Table 4
Postdoctoral Nonemployment Fellowship Programs

Program Provisions	Visiting Fellows	Intramural Research Training Award Fellows	National Research Service Award Fellows	NRC - NIH Research Associateship Program in Biotechnology
Concept and Purpose	Provide postdoctoral research training and international interchange	Provide advanced training and research experience to M.D.- and Ph.D.-level investigators at beginning of their research careers	Provide training in specified areas of biomedical and behavorial research	Provide research opportunities in biotechnology
Nature of Assignments	Research training only; may not perform services for NIH or administrative duties	Engage in research studies under the direction of preceptors and participate in ongoing research; primary patient care activities not permitted; service to NIH expected as by-product of research assignment	Research training in a specified area of research; service to NIH not permitted; clinical duties must be confined to those that are part of the research training	Full-time research on the problem outlined in the candidate's research proposal; clinical activities not envisioned
Qualifications	M.D., Ph.D., or other doctorate in health sciences and less than 3 years of postgraduate research experience	M.D., Ph.D., or other doctorate in biomedical, behavioral, or related science and less than 3 years of postgraduate research experience	M.D., Ph.D., or other doctorate	M.D., Ph.D., or other doctorate in related discipline, and 5 years or less of relevant postdoctorate research experience
Duration of Appointment	Initial award for 1 year; extensions in yearly increments to maximum of 2 years; extensions subject to approval of OD/NIH and Naturalization Service.	Initial award for 1 year; extensions in yearly increments to a maximum of 3 years; initial award approved by Associate Director for Intramural Affairs or Deputy Director for Intramural Research; extensions by BID Scientific Director	Initial award for 1 year; extensions in 12-month increments up to a maximum of 3 years; activation notice and payback agreement required at beginning of each extension	Initial award for 1 year; extensions in 1-year increments to a maximum of 3 years

Table 4 (continued)

Program Provisions	Visiting Fellows	Intramural Research Training Award Fellows	National Research Service Award Fellows	NRC - NIH Research Associateship Program in Biotechnology
Authority	42 CFR, Part 61A, PHS regulations	42 USC 284(b)(1)(C)	42 USC 289 1-1 42 CFR, Part 66	National Research Council
NIH Reference	NIH Manual 2300-320-3	NIH Manual 2300-320-7	NIH Manual 4800	NIH Manual 2300-320-5 (Guest Researchers)
Stipend Levels	$25,000 - 0-1 year $26,500 - 1-2 years $28,000 - 2-3 years	$25,000 - 0-1 year $26,500 - 1-2 years $28,000 - 2-3 years	$17,000 - 0 yrs. exp. $18,000 - 1 yr. exp. $25,000 - 2 yrs. exp. $26,250 - 3 yrs. exp. $27,500 - 4 yrs. exp. $28,750 - 5 yrs. exp. $30,000 - 6 yrs. exp. $31,500 - 7 or more years (5%-increase proposed)	Regular Associate: $28,000 - $37,000 (Paid by National Research Council)
Annual Increase	$1,500 upon annual renewal of appointment	Up to $1,500 each year; amount based on progress in training assignment; approved by BID Scientific Director	Advancement to next stipend level for each additional year of NRSA support	None
Comparability Increase	Not authorized; stipend levels reviewed periodically for comparability with other fellowship programs	Not authorized; stipend levels reviewed periodically for consistency with other fellowship programs	Stipend levels reviewed in comparison with other fellowship granting organizations, and adjustments approved by PHS	Stipend levels reviewed and adjusted by National Research Council

APPENDIX C. RECRUITMENT STRATEGIES USED BY THE INSTITUTES

This appendix contains lists of some specific recruitment strategies used by the different intramural research divisions of the NIH. The lists were compiled by the Personnel Officers and EEO Officers at most institutes, or otherwise compiled by the Executive Officer or an assistant to the institute's Director.

The Personnel Officers and EEO Officers were asked to provide the following information about their institute's recruitment strategies:

1. Strategies for recruiting staff fellows -

    a. In which journals or other publications does the institute advertise routinely for staff fellowship openings?

    b. Which minority colleges and universities were visited in the last two years for outreach activities or to recruit staff fellows?

    c. Do you mail NIH fellowship advertisements or notices to university deans or students?

    d. Which professional conferences or seminars have been attended for the purpose of recruiting staff fellows?

2. Long-range initiatives - What programs have you implemented to encourage young minority students to pursue careers in the biomedical and health related sciences?

The strategies are listed by type and then by institute within type of strategy.

Names of Journals or Publications Used to Advertise Staff-Fellow Openings

NCI - Science
Journal of Clinical Oncology
Journal of the American Medical Association

NEI - None

NHLBI - Science
CELL and Circulation
Annals of Internal Medicine
BLOOD Magazine
New England Journal of Medicine
FASEB Journal

NIA - Science
Nature
Journal of Neuro-Chemistry
Annals of Neurology
Neurology
Annals of Internal Medicine

NIAID - No Response

NIAMS - Nature
Pediatrics
Arthritis and Rheumatism
Journal of Bone and Joint Surgery
Science
Annals of Internal Medicine
New England Journal of Medicine
Archives of Physical Medicine and Rehabilitation Journal of Biomechanics
Journal of Biomedical Engineering
CELL Journal
FASEB Journal
TRENDS Journal

NICHD - No Response

NIDCD - None

Names of Journals, etc. (Cont'd)

NIDDK - Science
Nature
New England Journal of Medicine
CELL and Circulation
Gastroenterology Journal
Diabetes Journal

NIDR - Journal of Dental Research
Affirmative Action Register
Science

NIGMS (PRAT Fellowship)
- Science (1991)

NIEHS - Science
Nature
CELL Journal
Fundamental and Applied Toxicology
Toxicology and Applied Pharmacology
American Journal of Epidemiology
Veterinary Pathology
Chemical and Engineering News
AMSTAT News
Pharmaceutical Research
Neurotoxicology and Teratology
Epidemiology Monitor
Journal of the American Veterinary Medical Association
Applied Toxicology

NINDS - Science
CELL Journal
Physics Today
The Archive of Neurology
Neurology Magazine
Annals of Neurology
International Neuro-Psychological Society
American Psychological Association Monitor
American Psychological Society Observer

Visits to Colleges and Universities with Predominantly Black, Hispanic, or Native American Student Populations

NCI - No Response

NEI - No Response

NHLBI - No Response

NIA - None

NIAID - No Response

NIAMS - None. Program begins in fiscal year 1992.

NICHD - None

NIDCD - None

NIDDK - University of Puerto Rico

NIDR - Howard University Dental School

NIEHS - Atlanta University, Florida A&M University, and the Annual Consortium of Minority Health Schools

NINDS - Howard University, Morehouse College, Meharry Medical School (Also, routine visits to Harvard, Yale, Johns Hopkins, and UCLA Universities)

Institutes With Routine Mailings To University Deans Or Students

NEI, NIA, NIGMS (PRAT Fellowship), NIEHS, NINDS

Conferences Attended By Institute Personnel

Most institutes send personnel to the annual conferences of the Minority Access To Research Careers (MARC) and the Minority Biomedical Research Support (MBRS) Program, which are sponsored by the National Institute For General Medical Sciences (NIGMS). The MARC and MBRS programs target minority high school and college students, and the MBRS also sponsors minority faculty projects.

Conferences Attended (Cont'd)

NCI - No Response

NEI - Association for Research in Vision and Ophthalmology

NHLBI - No Response

NIA - North Carolina HBCU Coop Consortium
MARC/MBRS Conference
AMPHS Conference
Science Club Meetings at Morgan State College

NIAID - No Response

NIAMS - MARC/MBRS Conference

NICHD - Endocrine Society

NIDCD - MARC/MBRS Conference
National Symposium on Health Research Career Opportunities for American Indian and Alaskan Natives

NIDDK - MBRS Conference
National Medical Association
Beta Kappa Chi - Honor Society

NIDR - AMPHS Conference, sponsored by Morehouse College

NIEHS - Society of Toxicology
FASEB Conference
MBRS Conference

NINDS - All Neurosciences Meetings

Long-Range Recruiting Initiatives

NCI

1. Student Research Training (SRT) Program--a summer training program for high school and college students, although it can be used for six-month training periods; the program was started in 1984 and about 30 percent of the participants are minority students.
2. Adopt-A-School Program - local, McKinley High School has helped to train students and teachers since 1989
3. Science Enrichment Program

NEI

1. Participates in the Summer Training Program, funded by the Juvenile Diabetes Foundation; started 10 years ago; provides for 30 to 40 students

NHLBI

1. Participates in the NIH Summer Program and MARC Program; students actually work in the NHLBI laboratories
2. Participates in the SRT
3. Summer IRTA program for college graduates
4. District of Columbia Science Fairs

NIA

1. Participates in MARC and MBRS programs and the NIH Summer Program
2. Works on Science Fairs with Dunbar High School in Baltimore, Maryland

NIAID

1. Participates in the NIH Summer Program
2. Created Introduction to Biomedical Sciences Program for training college undergraduate and graduate students
3. Adopted Dunbar High School for fiscal year 1991-1992

NIAMS

1. Participates in the NIH Summer Program, the Summer IRTA program, and the MARC program
2. Participates in District of Columbia Science Fairs
3. Initiated a special faculty training program in 1990

Long Range Recruiting Initiatives (Cont'd)

NICHD

1. Participates in the NIH summer programs
2. Initiated special seminars for minority students, 1991

NIDCD

1. NIH Summer Program in 1991

NIDDK

1. Hires students for the summer through the MARC Program
2. Participates in local junior high and high school science fairs each year

NIDR

1. Participates in MARC and MBRS summer programs
2. Assists students through the COSTEP Program

NIEHS

1. Established the NIEHS Summer Program in 1980
2. Hires college students under the NIH Stay-In-School Program, for more than ten years
3. Use of the P/Q Graduate Program for students from low-income families, which provides coursework credit hours

NINDS

1. NINDS Summer Program, started in 1985 for all students
2. Use of NIH Minority Supplements, providing additional funding for minority students/trainees, beginning in 1988
3. Initiated the High-School Adoption Program in 1982
4. Participates in MARC/MBRS programs
5. Sponsors minority students (about 30) to attend the workshops at the Neuroscience Meetings
6. Outreach to Medical Magnate School for Minorities, beginning in 1991
7. Initiated special summer workshop for all students, beginning in 1991

APPENDIX D. PAY LEVELS FOR PHS COMMISSIONED CORPS OFFICERS

Participants in the Staff Fellowship Program who transfer into the PHS Commissioned Corps receive compensation based on military pay schedules. A recent listing of the applicable pay schedules is contained on the following pages of this appendix.

PUBLIC HEALTH SERVICE
PAY AND ALLOWANCES OF COMMISSIONED OFFICERS
EFFECTIVE JANUARY 1, 1990

	MONTHLY RATES OF BASIC PAY														QUARTERS ALLOWANCE		
	CUMULATIVE YEARS OF SERVICE																
PAY GRADE	2 OR LESS	OVER 2	OVER 3	OVER 4	OVER 6	OVER 8	OVER 10	OVER 12	OVER 14	OVER 16	OVER 18	OVER 20	OVER 22	OVER 26	WITH DEPS	W/O DEPENDENTS FULL	W/O DEPENDENTS PARTIAL
O-9	5243.40	5380.80	5495.40	5495.40	5495.40	5635.20	5635.20	5869.80	5869.80	6359.40	6359.40	6711.90[a]	6711.90[a]	7122.60[a]	781.80	635.40	50.70
O-8	4749.30	4891.50	5007.60	5007.60	5007.60	5380.80	5380.80	5635.20	5635.20	5869.80	6124.50	6359.40	6516.00	6516.00	781.80	635.40	50.70
O-7	3946.20	4214.40	4214.40	4214.40	4403.40	4403.40	4658.70	4658.70	4891.50	5380.80	5751.00	5751.00	5751.00	5751.00	781.80	635.40	50.70
O-6	2925.00	3213.60	3424.20	3424.20	3424.20	3424.20	3424.20	3424.20	3540.30	4100.10	4309.50	4403.40	4658.70	5052.60	704.40	582.90	39.60
O-5	2339.10	2746.80	2936.70	2936.70	2936.70	2936.70	3025.50	3188.10	3402.00	3656.70	3866.40	3983.40	4122.60	4122.60	678.60	561.30	33.00
O-4	1971.90	2401.20	2561.40	2561.40	2608.80	2724.00	2909.70	3073.20	3213.60	3354.60	3447.30	3447.30	3447.30	3447.30	598.50	520.20	26.70
O-3	1832.40	2048.70	2190.30	2423.40	2539.20	2630.40	2772.60	2909.70	2981.40	2981.40	2981.40	2981.40	2981.40	2981.40	495.30	417.00	22.20
O-2	1597.80	1745.10	2096.40	2166.90	2212.20	2212.20	2212.20	2212.20	2212.20	2212.20	2212.20	2212.20	2212.20	2212.20	422.70	330.90	17.70
O-1	1387.20	1444.20	1745.10	1745.10	1745.10	1745.10	1745.10	1745.10	1745.10	1745.10	1745.10	1745.10	1745.10	1745.10	377.70	278.40	13.20

Above table does not apply to commissioned officers who have been credited with over 4 years of active service as an enlisted member (see table below)

COMMISSIONED OFFICERS WHO HAVE BEEN CREDITED WITH OVER 4 YEARS ACTIVE SERVICE AS AN ENLISTED MEMBER

PAY GRADE	OVER 4	OVER 6	OVER 8	OVER 10	OVER 12	OVER 14	OVER 16	OVER 18	OVER 20	OVER 22	OVER 26	WITH DEPS	W/O DEPENDENTS FULL	W/O DEPENDENTS PARTIAL
O-3E	2423.40	2539.20	2630.40	2772.60	2909.70	3025.50	3025.50	3025.50	3025.50	3025.50	3025.50	531.90	450.00	22.20
O-2E	2166.90	2212.20	2282.10	2401.20	2493.00	2561.40	2561.40	2561.40	2561.40	2561.40	2561.40	480.00	382.80	17.70
O-1E	1745.10	1864.20	1932.90	2002.80	2072.70	2166.90	2166.90	2166.90	2166.90	2166.90	2166.90	443.40	329.10	13.20

a. Basic Allowance for Subsistence is $123.92 for all officers

b. Basic Allowance for Quarters & Basic Allowance for Subsistence are Non-Taxable

c. [a]Basic Pay is limited to $6516.60 per month (Level V of the Executive Schedule)

GRADE OR STATUS	YEARS OF CREDITABLE SERVICE 1/	VARIABLE SPECIAL PAY 2/	VARIABLE SPECIAL PAY	BOARD CERTIFIED PAY 2/	BOARD CERTIFIED PAY	RETENTION SPECIAL PAY 3/4/5	MAXIMUM SPECIAL PAY*
Interns	N/A	1,200	100.00	N/A	N/A	N/A	1,200
1-06	0-5	5,000	416.66	2,500	208.33	15,000	22,500
1-06	6-7	12,000	1,000	2,500	208.33	15,000	29,500
1-06	8-9	11,500	958.33	2,500	208.33	15,000	29,000
1-06	10-11	11,000	916.66	3,500	291.67	15,000	29,500
1-06	12-13	10,000	833.33	4,000	333.33	15,000	29,000
1-06	14-17	9,000	750.00	5,000	416.66	15,000	29,000
1-06	18-21	8,000	666.67	6,000	500.00	15,000	29,000
	22-up	7,000		6,000	500.00	15,000	28,000
07-09	0-9	1,000	83.33	2,500	208.33	15,000	18,500
07-09	10-11	1,000	83.33	3,500	291.67	15,000	19,500
07-09	12-13	1,000	83.33	4,000	333.33	15,000	20,000
07-09	14-17	1,000	83.33	5,000	416.67	15,000	21,000
07-09	18-up	1,000	83.33	6,000	500.00	15,000	22,000

*These totals show the maximum amount of special pay a medical officer can receive provided he/she is eligible and qualified for each element, and has completed any active duty-service obligation agreement for RSP.

1. Civilian internship, residency, active service as M.D.
2. Payable in equal monthly installments. Payable to residents and obligated officers.
3. Payable annually under contracts.
4. Interns and officers in initial residencies not eligible.

STANDARD UTILITY/MAINTENANCE EXPENSE TABLE*

WASHINGTON METROPOLITAN AREA 20892 053

EFFECTIVE JANUARY 1, 1990

GRADE	WITH DEPENDENTS	WITHOUT DEPENDENTS
0-1	$353.43	$260.51
0-2	$325.31	$254.66
0-3	$335.62	$282.56
0-4	$350.22	$304.40
0-5	$370.52	$306.48
0-6	$341.47	$282.57
0-7 & up	$288.75	$234.68

*THESE RATES ARE SUBJECT TO CHANGE

STANDARD UTILITY/MAINTENANCE EXPENSE TABLE*

DURHAM, NC 27709 180

EFFECTIVE JANUARY 1, 1990

GRADE	WITH DEPENDENTS	WITHOUT DEPENDENTS
O-1	$158.39	$116.75
O-2	$162.43	$127.15
O-3	$171.11	$144.06
O-4	$173.82	$151.08
O-5	$166.48	$137.70
O-6	$161.98	$134.04
O-7 & up	$102.80	$ 83.55

*THESE RATES ARE SUBJECT TO CHANGE

STANDARD UTILITY/MAINTENANCE EXPENSE TABLE*

BALTIMORE, MD. 21224 129

EFFECTIVE JANUARY 1, 1990

GRADE	WITH DEPENDENTS	WITHOUT DEPENDENTS
O-1	$218.47	$161.03
O-2	$185.30	$145.06
O-3	$211.10	$177.73
O-4	$247.08	$214.75
O-5	$195.17	$161.44
O-6	$169.87	$140.57
O-7 & up	$130.39	$105.97

*THESE RATES ARE SUBJECT TO CHANGE

STANDARD UTILITY/MAINTENANCE EXPENSE TABLE*

FORT DETRICK (FREDERICK), MD. 21701 130

EFFECTIVE JANUARY 1, 1990

GRADE	WITH DEPENDENTS	WITHOUT DEPENDENTS
O-1	$174.91	$128.92
O-2	$146.58	$114.75
O-3	$177.82	$149.71
O-4	$126.67	$110.10
O-5	$121.82	$100.76
O-6	$113.06	$ 93.56
O-7 & up	$ 53.00	$ 43.07

*THESE RATES ARE SUBJECT TO CHANGE

STANDARD UTILITY/MAINTENANCE EXPENSE TABLE *

BOSTON & FRAMINGHAM, MA. 02115, 01701 120

EFFECTIVE JANUARY 1, 1990

GRADE	WITH DEPENDENTS	WITHOUT DEPENDENTS
O-1	$409.24	$301.65
O-2	$399.12	$312.44
O-3	$490.27	$412.76
O-4	$552.88	$480.55
O-5	$532.22	$440.22
O-6	$506.91	$419.47
O-7 & up	$457.91	$372.16

*THESE RATES ARE SUBJECT TO CHANGE

STANDARD UTILITY/MAINTENANCE EXPENSE TABLE*

HAMILTON, MONT. 59840 651

EFFECTIVE JANUARY 1, 1990

GRADE	WITH DEPENDENTS	WITHOUT DEPENDENTS
O-1	$ 55.45	$ 40.87
O-2	$ 50.24	$ 39.33
O-3	$ 65.05	$ 54.76
O-4	$ 64.81	$ 56.33
O-5	$ 59.82	$ 49.48
O-6	$ 48.59	$ 40.21
O-7 & up	$ 82.93	$ 67.40

*THESE RATES ARE SUBJECT TO CHANGE

STANDARD UTILITY/MAINTENANCE EXPENSE TABLE*

PHOENIX, AZ 85014 013

EFFECTIVE JANUARY 1, 1990

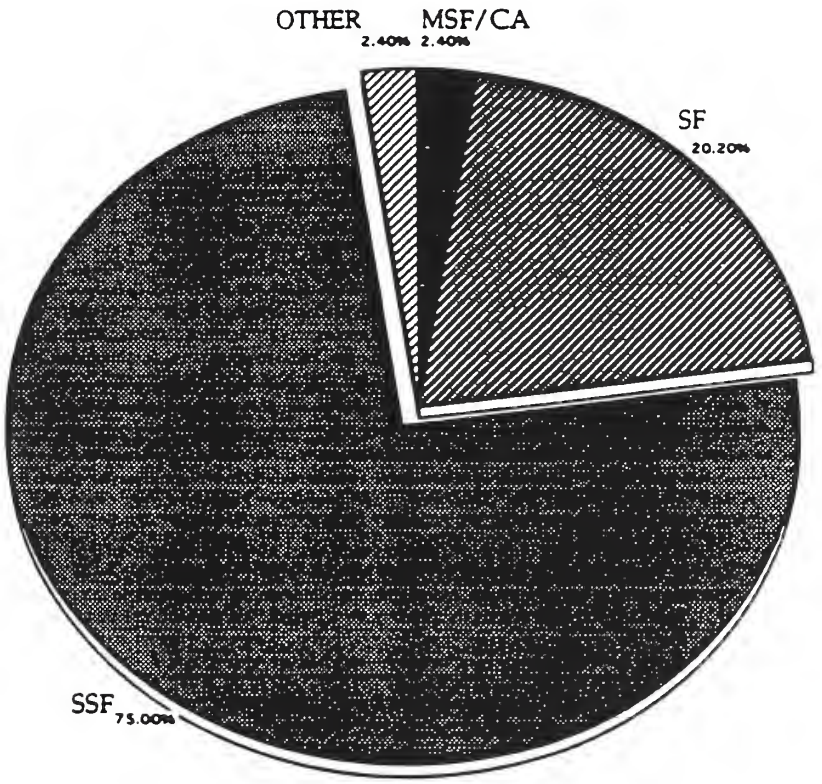
GRADE	WITH DEPENDENTS	WITHOUT DEPENDENTS
O-1	$103.74	$ 76.47
O-2	$148.90	$116.56
O-3	$186.14	$156.71
O-4	$209.03	$181.69
O-5	$192.65	$159.35
O-6	$140.05	$115.89
O-7 & up	$109.33	$ 88.85

*THESE RATES ARE SUBJECT TO CHANGE

APPENDIX E

SELECTION PROFILES OF STAFF FELLOWSHIP PROGRAM FELLOWS

NCI SENIOR STAFF FELLOWS
PERCENTS FROM INITIAL FELLOWSHIPS

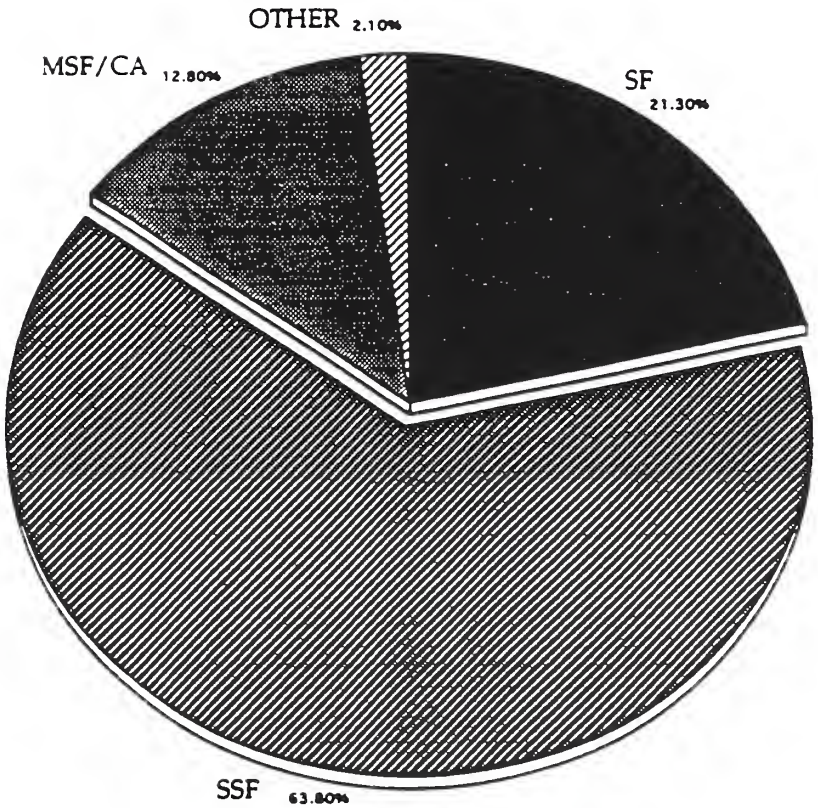


NCI SERVICE FELLOWS
Initial Fellowship By Current Fellowship

	Current				
	SF	SSF	MSF/CA	MSF/RA	TOTALS
INITIAL					
SF	29	17	0	0	46
SSF	0	63	0	0	63
MSF/C	0	2	45	0	47
MSF/RA	0	0	0	12	12
OTHER	0	2	0	0	2
	29	84	45	12	170

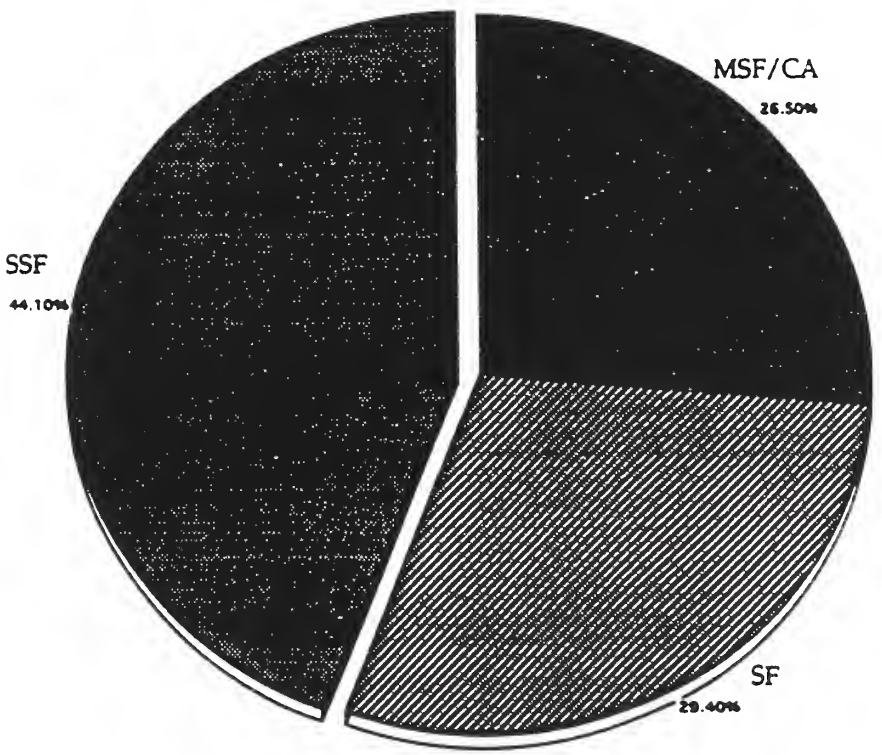
Legend:
SF= Staff Fellowship
SSF= Senior Staff Fellowship
MSF=Medical Staff Fellowship
MSF/CA=Associates in the MSF program
MSF/RA=Research Associates in the MSF program
OTHER=Other service fellowships, including epidemiology and pharmacology training fellowships.

NHLBI SENIOR STAFF FELLOWS
PERCENTS BY INITIAL FELLOWSHIPS



Legend:
SF= Staff Fellowship
SSF= Senior Staff Fellowship
MSF=Medical Staff Fellowship
MSF/CA=Clinical Associates in the MSF program
MSF/RA=Research Associates in the MSFprogram
OTHER=Other service fellowships, including epidemiology and pharmacology training fellowships.

NIDDK SENIOR STAFF FELLOWS
PERCENTS BY INITIAL FELLOWSHIP



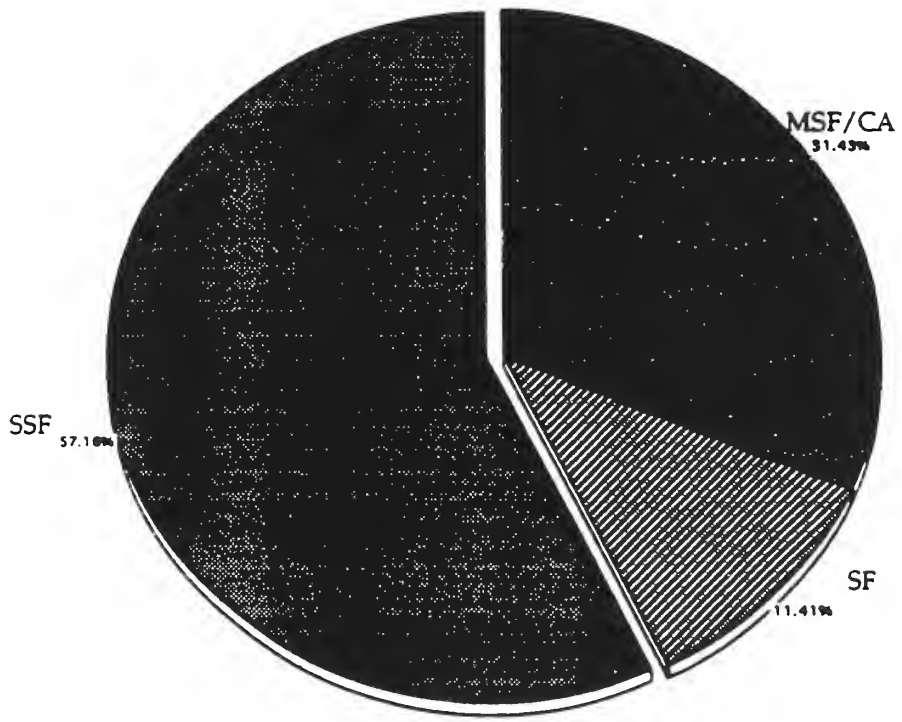
NIDDK SERVICE FELLOWS
Initial Fellowship By Current Fellowship
Current

	SF	SSF	MSF/CA	OTHER	TOTALS
SF	13	10	0	0	23
SSF	0	15	0	0	15
MSF/CA	0	9	12	0	21
OTHER	2	0	0	0	2
	15	34	12	0	61

(Excludes Fellows in the Commissioned Corps)

Legend:
SF= Staff Fellowship
SSF=Senior Staff Fellowship
MSF=Medical Staff Fellowship
MSF/CA=Clinical Associates in the MSF program
MSF/RA=Research Associates in the MSF program
OTHER= service fellowships, including epidemiology and pharmacology training fellowships.

NIAD SENIOR FELLOWS
PERCENTS BY INITIAL FELLOWSHIPS



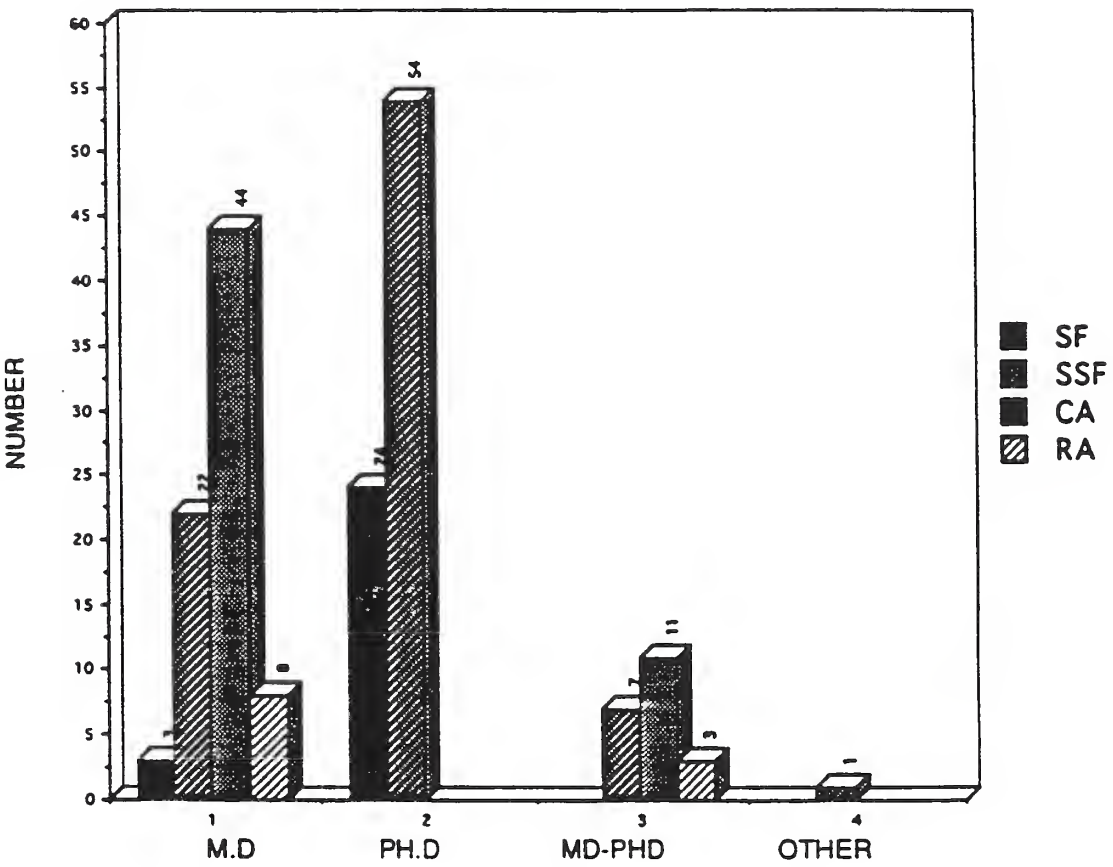
NIAID SERVICE FELLOWS
Initial Fellowship By Current Fellowship

Initial:	Current: SF	SSF	MSF/CA	OTHER	TOTALS
SF	11	4	0	0	15
SSF	0	20	0	0	20
MSF/CA	0	11	24	0	35
OTHER	0	0	0	0	0
	11	35	24	0	70

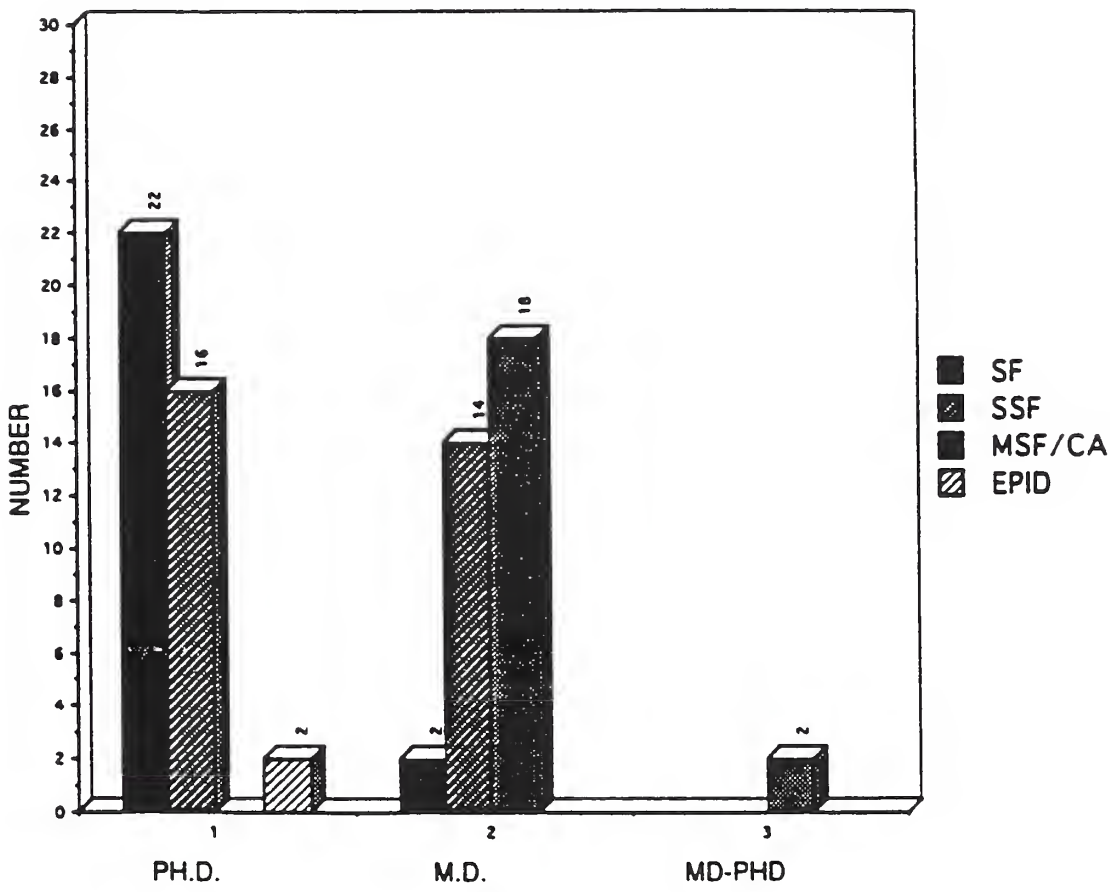
(Excluding Fellows in the Commissioned Corps)

Legend:
SF= Staff Fellowship
SSF=Senior Staff Fellowship
MSF=MedicalStaff Fellowship
MSF/CA=Clinical Associates in the MSF program
MSF/RA=Research Associates in the MSF program
OTHER=Other service fellowships, including epidemiology and pharmacology training fellowships.

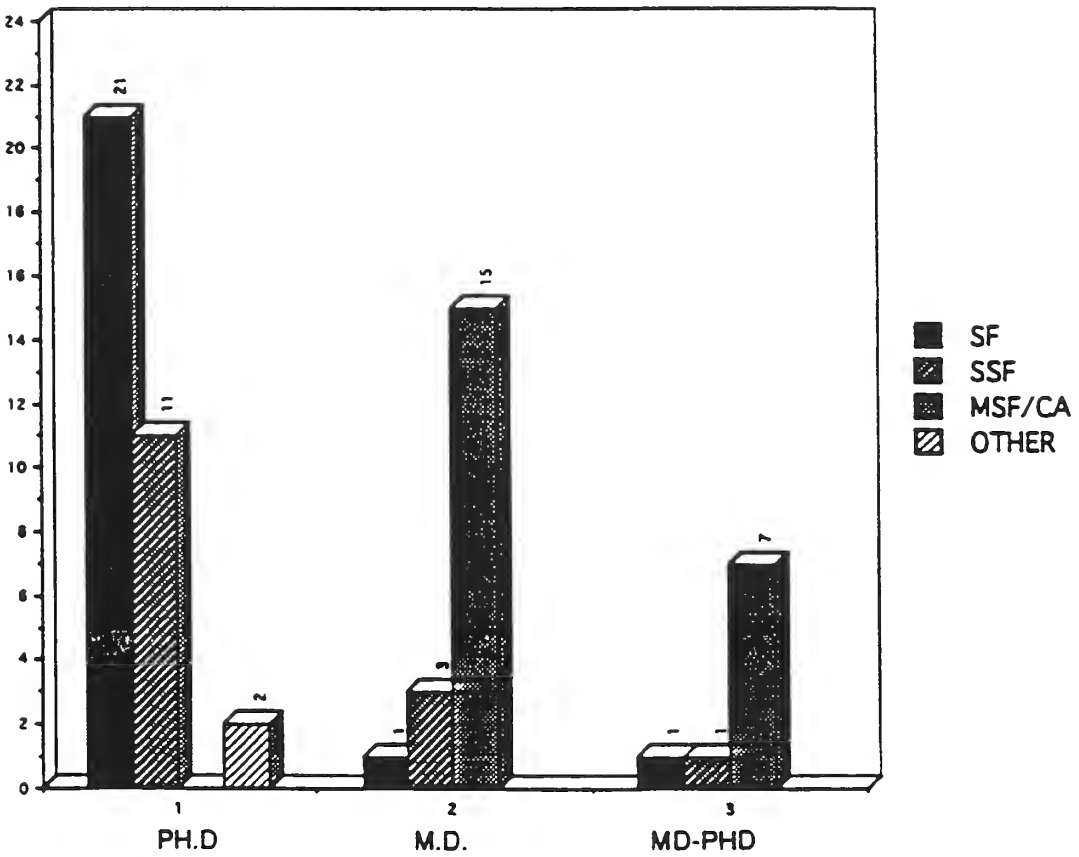
NCI SERVICE FELLOWS
BY DEGREE AND INITIAL FELLOWSHIP



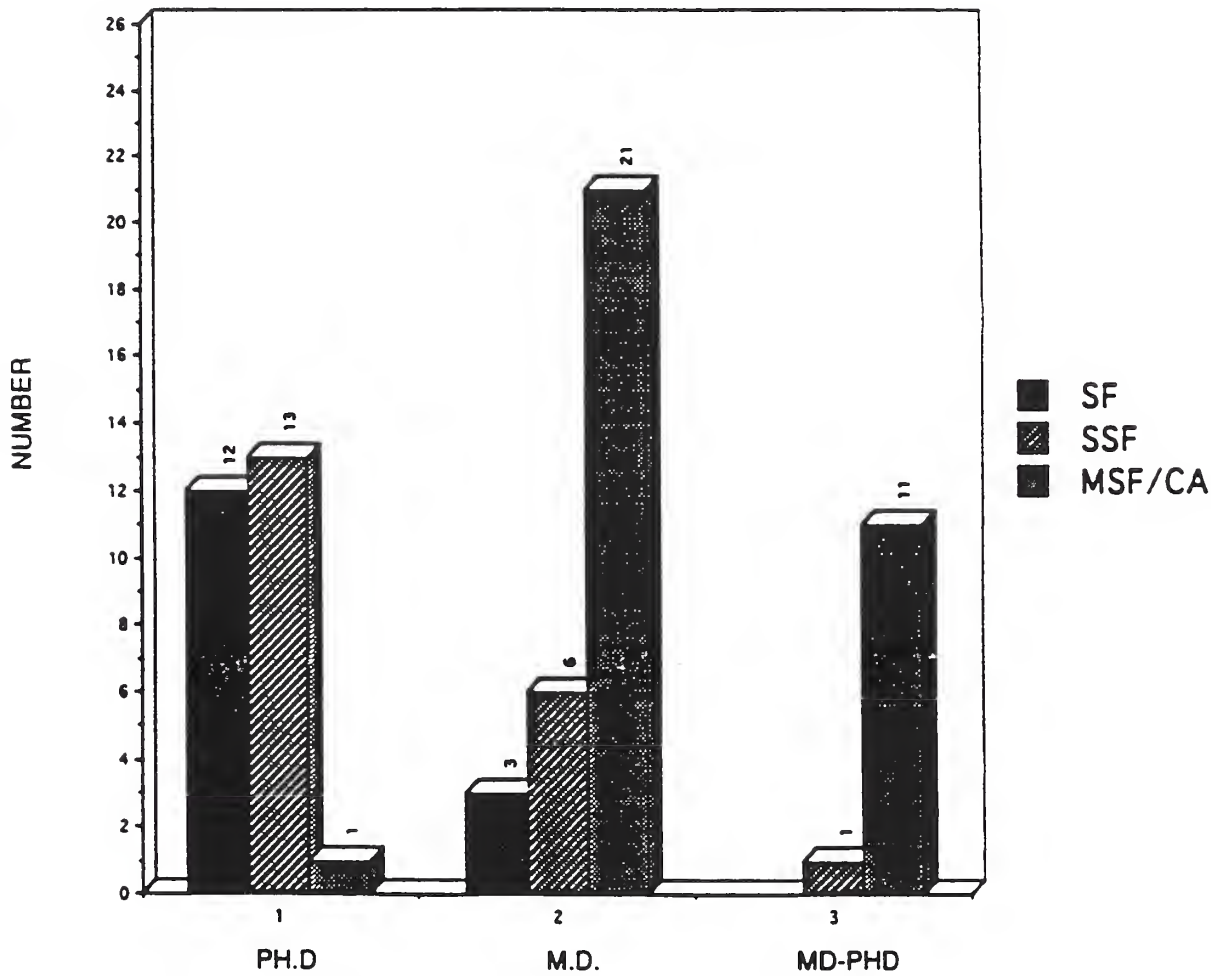
NHLBI SERVICE FELLOWS
BY DEGREE AND INITIAL FELLOWSHIP



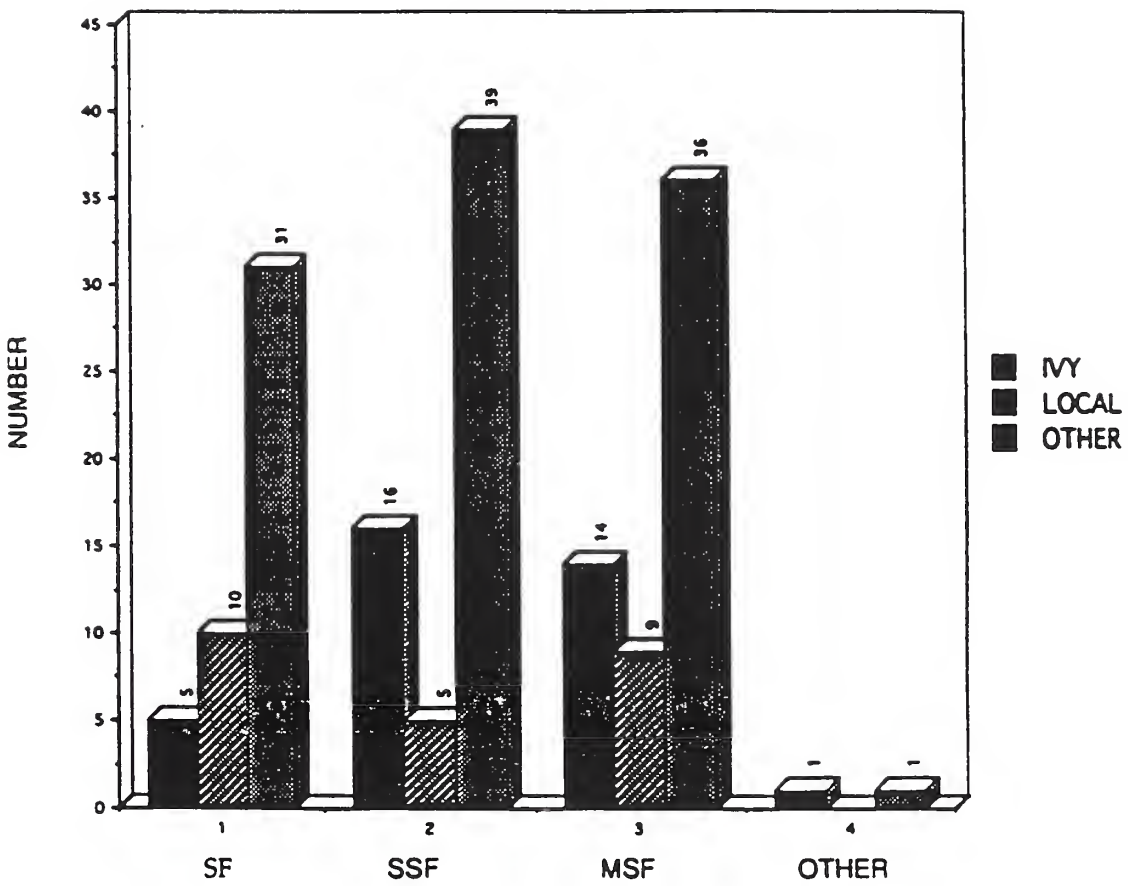
NIDDK SERVICE FELLOWS
DEGREE BY INITIAL FELLOWSHIP



NIAID SERVICE FELOWS
DOCTORAL DEGREE BY FELLOWSHIP



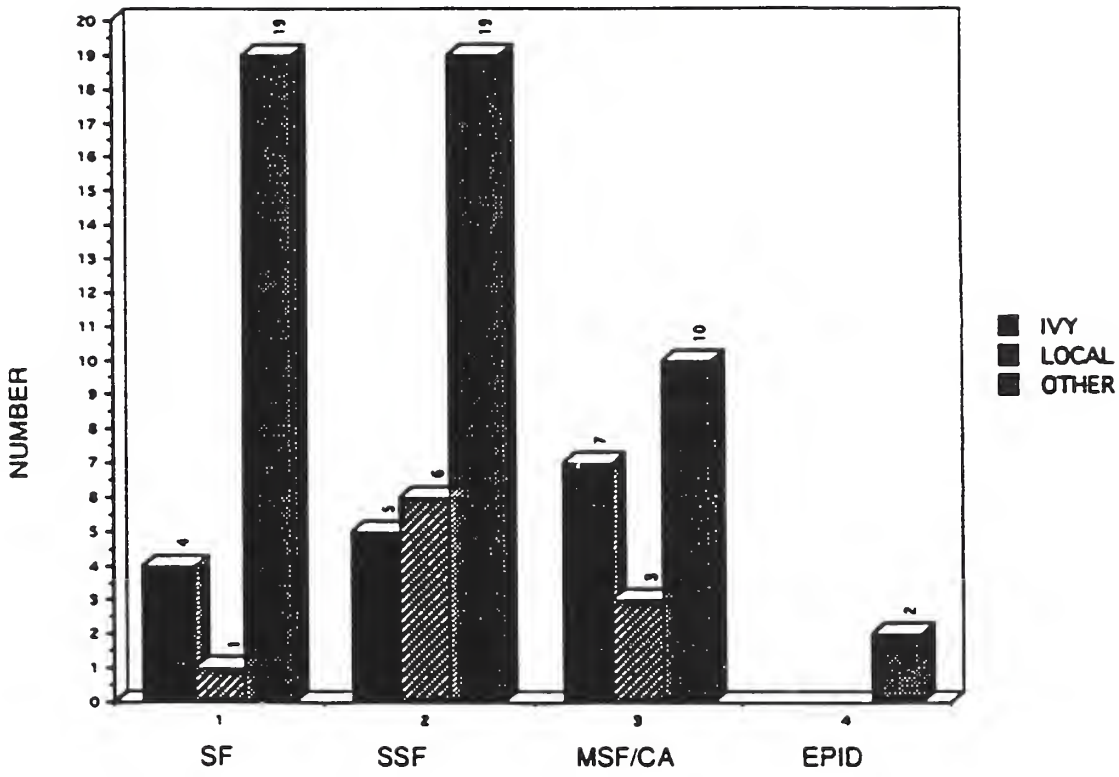
NCI SERVICE FELLOWS
FELLOWSHIP TITLE BY SCHOOL



Legend:
SF=Staff Fellowship
SSF=Senior Staff Fellowship
MSF=Medical Staff Fellowship, including Clinical Associates and Research Associates
OTHER=Other service fellowships, including epidemiology and pharmacology training fellowships.

Graduate Schools:
IVY=Ivy-league college/university, or old and well-established large research centers
LOCAL=Local to the Bethesda, Maryland campus/commuting area
OTHER=All other colleges and universities.

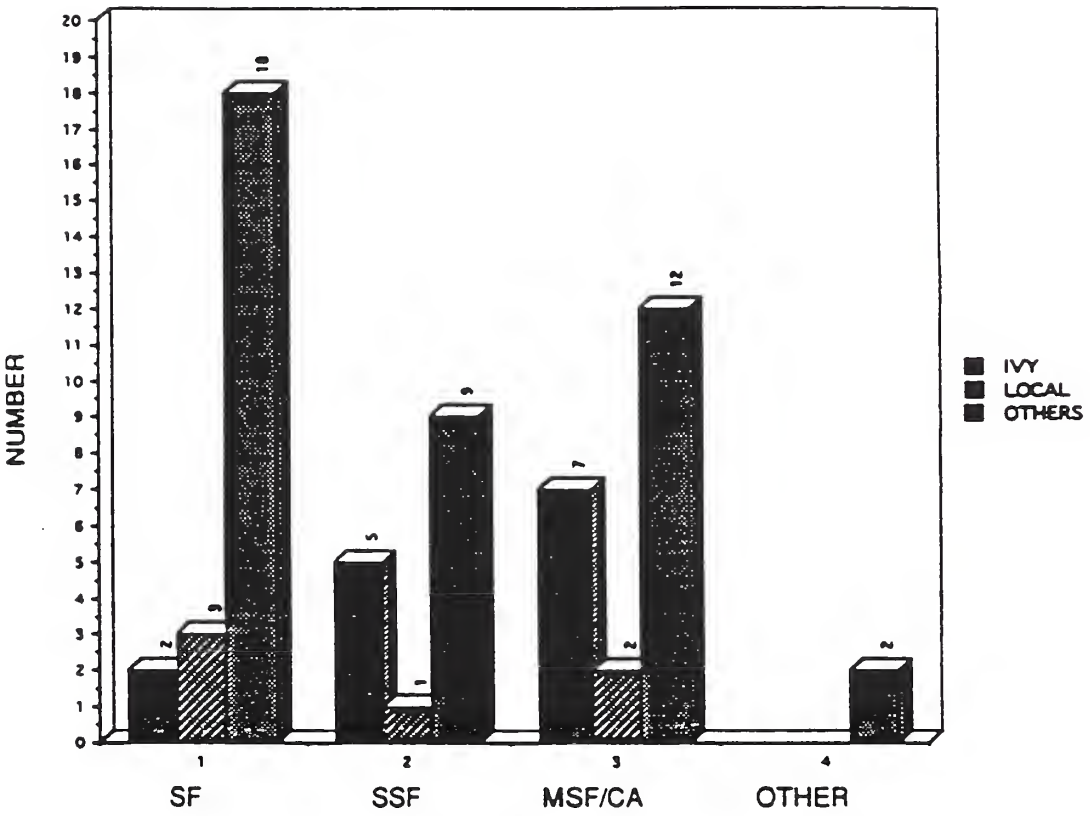
NHLBI SERVICE FELLOWS
FELLOWSHIP TITLE BY SCHOOL



Legend:
SF=Staff Fellowship
SSF=Medical Staff Fellowship, including Clinical Associates and Research Associates
OTHER=Other service fellowships, including epidemiology and pharmacology training fellowships.

Graduate Schools:
IVY=Ivy-league college/university , or old and well-established large research centers
LOCAL=Local to the Bethesda, Maryland campus/commuting area
OTHER=All other colleges and universities.

NIDDK SERVICE FELLOWS
INITIAL FELLOWSHIP BY SCHOOL



Legend:
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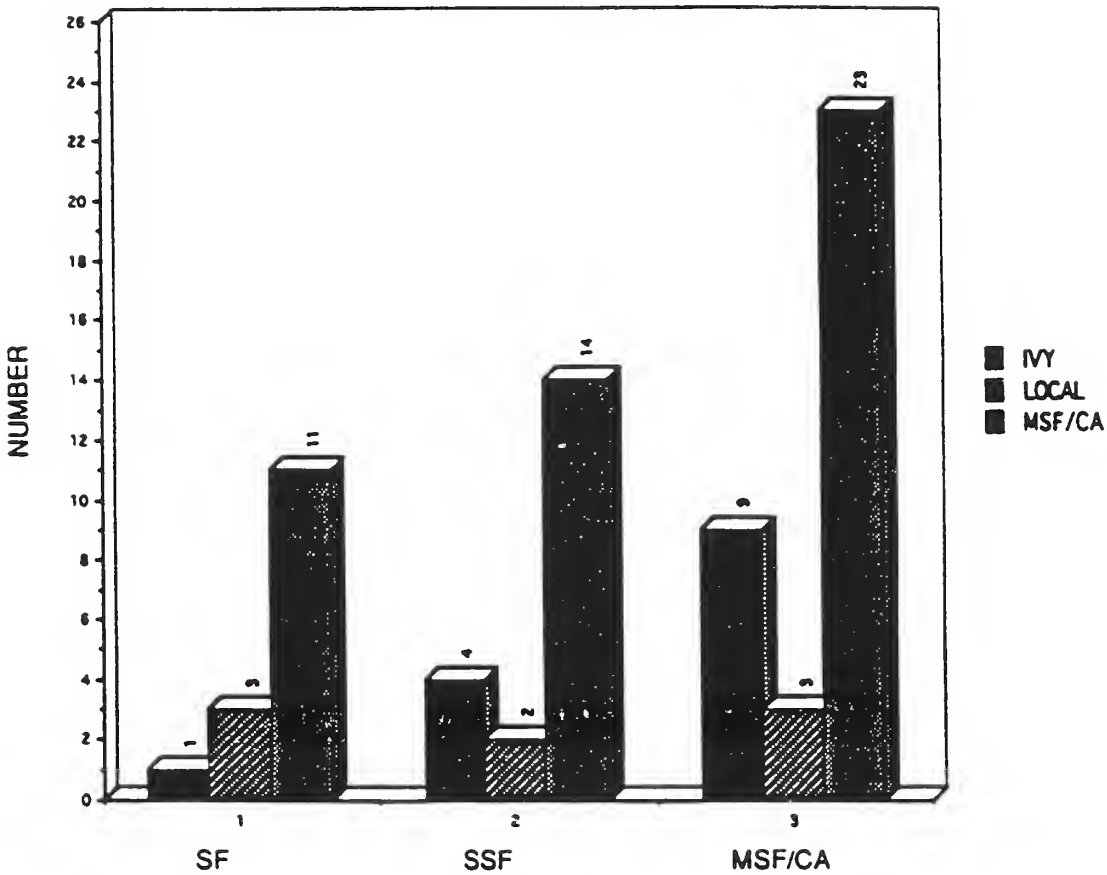
SSF=Senior Fellowship
MSF=Medical Staff Fellowship, including Clinical Associates and Research Associates
OTHER=Other service fellowships, including epidemiology and pharmacology training fellowships.

Graduate Schools:

IVY=Ivy-league college/university, or old and well-established large research centers
LOCAL=Local to the Bethesda, Maryland campus/commuting area
OTHER=All other college and universities.

NIAID SERVICES FELLOWS
FELLOWSHIP TITLE BY SCHOOL



Legend:
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SSF=Senior Staff Fellowship
MSF=Medical staff Fellowship, including Clinical Associates and Research Associates
OTHER=Other service fellowships, including epidemiology and pharmacology training fellowships.

Graduate Schools:
IVY=Ivy-league college/university, or old well-established large research centers
LOCAL=Local to the Bethesda, Maryland campus/commuting area
OTHER=All other colleges and universities.

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Appendix B

COMMITTEE ON THE STATUS OF NIH INTRAMURAL MINORITY SCIENTISTS

Survey of Tenured Intramural Scientist

1. As a tenured investigator, has your research productivity been recognized with appropriate allocation of resources, with promotion, and with greater administrative and scientific responsibilities?

2. Does your Institute and your Laboratory/Branch actively recruit minority scientists, and does it appropriately support their advancement?

3. Given the fact that the Branch Chief/Lab Chief is the most important advocate to the candidate's tenure process, what have been the most positive factors provided by your advocate?

4. Have you found appropriate role models and mentors at NIH?

5. Are you happy with your current position at NIH? If you had an opportunity to do it over, would you choose to pursue your career again at NIH?

6. Did you at any time feel that you had to be significantly better than your counterparts?

7. Please rank the following in order of importance for efforts to recruit and retain minorities at NIH.

_____ More aggressive postdoctoral recruitment of minority scientists.

_____ Establishment of a graduate school of biomedicine at NIH.

_____ Reform of tenure and promotion procedures.

_____ Appointment of minority scientists to leadership roles at NIH.

_____ Establishment of a formal tenure track system for postdoctoral fellow.

8. Have you ever worked at NIH before your current tour? In what capacity?

9. Have you ever encountered discrimination in your dealings with co-workers at NIH?

Recommendations:

Please mail completed forms to:

Griffin P. Rodgers
Chief, Molecular Hematology Unit, NIDDK
Bldg. 10, Room 9N-318
Bethesda, MD 20892

Appendix C

Committee on the Status of NIH Intramural Minority Scientists

Survey of Non-Tenured Intramural Scientists

1. Please enter the names of the college and graduate schools you attended.

   College _____

   Graduate
   School(s)_____

   _____

   _____

   Professional School(s)

   _____

   _____

2. My **major** in Graduate or Professional School was:

   _____

   My highest degree is_____

   Date earned _____

3. (a) Before you came to NIH, did you have research training elsewhere?

   Yes _____ No _____

   If no, go to question 4

   If yes, please answer (b) and (c)

   (b) Where did you have research training?

   _____

   (c) How long was this research training period?

   _____

4. On a Likert scale, with 1 = no experience or training and
10 = very broad experience/training,

please rate your background in basic research:

1 2 3 4 5 6 7 8 9 10

5. Aside from your dissertation, did you have publications before coming to NIH?

No ____ Yes, one ____ Yes, several ____

6. (a) Is your current work at NIH related to your past research?

Yes ____ No ____

(b) To what extent is your current work related to your past research?

___ not at all related

___ only the measurement aspect is related to my current work

___ the area of research in my present work is completely different from my past research

___ other (specify)

_____

_____

7. When did you begin work at NIH?

19____

8. Which NIH institute now employs you?

_____

9. Do you understand the tenure process currently followed by your institute?

_____

_____

10. (a) What is your current position at NIH?

_____

(b) Was this your position when you first came to NIH?

Yes _____ No _____

If no, please explain:

_____

_____

11. How did you learn about the job at NIH for which you were hired?

_____

_____

_____

12. Before you worked at NIH, did you participate in training activities on campus?

Yes _____ No _____

13. Did you have a formal interview before you were hired at NIH?

Yes _____ No _____

14. Did you make a formal presentation of your previous research before you were hired at NIH?

Yes _____ No _____

15. How many pre-doctoral/post-doctoral fellows have positions in the laboratory of which you are a member?

_____

16. Do you believe that the institution of a formalized tenure system would be valuable at NIH?

Appendix D

INTERVIEW GUIDE

I. Assessment of NIH Workplace Environment

A. Scientific Guidance and Mentoring

Mentoring and Performance Standards

1. Describe your relationship with your immediate supervisor and with your branch chief
2. Do you feel that these are productive, supportive, and mentoring relationships?
3. Is mentoring important to success in science?
4. What is a good mentor?
5. Have you had good mentoring at NIH?
6. Do you have mentors outside of the NIH environment? How did these relationships develop?
7. Do you feel that your scientific career is developing in an appropriate manner?
8. Has your supervisor discussed your performance level in this position or explained your potential for career growth and development within the position?
9. Do you understand the tenure process? Has this been discussed with you or explained to you at any point during your time here at NIH?
10. Are you currently or have you in the past participated in mentoring students who are pursuing careers in medicine and/or the sciences?

B. Individual Scientific Progress

1. How would you characterize your research group (molecular biology, chemistry, epidemiology, clinical research, patient care, microbiology, etc.)?
2. What is your main research objective?
3. Is your current project within the central research tract of your laboratory or branch? How many individuals are working on this project?
4. How was your current project selected?
5. How long have you worked on this project?

6. Do you have any supervisory responsibilities? Please describe.
7. Are you involved in more than one project?
8. Have circumstances ever made it necessary for you to change your research focus? Why was this necessary?
9. What are your scientific strengths, weaknesses, and areas of expertise?
10. How often do you meet with your immediate supervisor, section head, and lab chief?
11. How often are you required to present at laboratory meetings?
12. Do you freely discuss difficulties in the laboratory with your laboratory supervisor? Do you receive useful suggestions to ameliorate the problem?

C. Conduciveness of NIH Workplace Environment to Scientific Productivity

1. Are you comfortable in the NIH work environment?
2. Are you happy at NIH? Was this a good move for your family as well?
3. How does the actual environment at NIH compare with your expectations?
4. How are working relationships among members of your laboratory or branch? Is there a high level of com petitiveness, contentiousness or pressure?
5. Do you socialize with co-workers outside of the laboratory environment? Do you attend laboratory parties? Do you feel that this is important to your ultimate success in the work environment?
6. Do you feel as though your peers and superiors have respect for your ideas and abilities?
7. What are the advantages associated with your position at NIH? What are its disadvantages?
8. Would you choose to come to NIH again?

II. <u>Future Plans re: NIH and General Career Objectives</u>

1. Do you plan to pursue scientific tenure at the NIH?
2. Do you believe that you will be tenured?
3. What are your long term career objectives? Can these be achieved at NIH?
4. If you plan to leave NIH prior to consideration for tenure, what type of position would you hope to accept?

III. Perceptions/Impressions of NIH

1. What are the best aspects of NIH?
2. What are the most difficult aspects of NIH?
3. How can NIH make its positions more available to the broadest segment of capable individuals?

Appendix E

Appendix E

Although no similar statistics were collected prior to the establishment of the OE, data was collected on the number of applicants applying centrally for the Medical Staff Fellowship/Clinical Associate-Research Associate Program (MSF/CA-RA Program). For purposes of comparison, data on the number of applicants applying directly to the OE is plotted with data from the central Clinical Center Office for the MSF/CA-RA Program (**Figure A**). The late 1980's saw a precipitous decline in the number of physicians applying for MSF/CA-RA Program through the Clinical Center central office. In the last three years the numbers of applicants applying centrally have rebounded to levels exceeding those of the mid 1980's. Since a number of the new recruitment efforts direct applicants to apply to the program directors and not necessarily through the central office, it is believed that the recent increase in applications received centrally represents an authentic increase and not merely a redistribution of applications. This interpretation is consistent with the observation that in the last three years that on average 94% of positions have been filled compared to 78% in 1990. In the accredited residencies 98% of positions were filled (**Figure B**). The increased applications have followed a series of new efforts directed at improving intramural recruitment and training.

Recruitment

Recruitment efforts have been directed at reaching all groups and include the following:

- New, centralized advertising campaign was created with routine advertisements featured in Science, The New England Journal of Medicine and other major scientific journals. The advertisements have a unique design that is easily recognizable, flexible, and can build marketplace recognition. Positions as well as programs, and training opportunities are featured. Occasional two-page spreads are used to present all ICDs encompassed by the NIH. Special two-page spreads are run in issues of Science devoted to minorities in science and to women in science. Advertisements are also placed in the Journal of the National Medical Association. Candidates are encouraged to contact the Office of Education for further information.

- At no cost to the candidate, an electronic database is accessible via modem to candidates who wish to review all positions that remain open besides those listed in any individual advertisement. Instructions are provided in each advertisement.

- By following instructions in the advertisements candidates can also order the Postdoctoral Research Fellowship Opportunities Catalog which describes the clinical and basic science training programs, the research of tenured faculty, and how to apply. Recent graduates of the clinical training programs are listed with their current positions.

- An electronic version of the catalog is available over Internet.

- The Resident Awards Program was created to raise the prestige and visibility of training for a career in biomedical research. Talented residents who have distinguished themselves by performing meritorious research are invited to the NIH to present their work and to learn about intramural opportunities for training. Residents are notified about the program by a call for abstracts in the New England Journal of Medicine and by mailings to all U.S. clinical program directors in internal medicine, pediatrics, obstetrics and gynecology, neurology, psychiatry. Additional mailings also include MD/PhD students who have completed training through the MARC Program.

- Within the Office of Education designated professionals are responsible for the recruitment and training needs of basic scientists and clinical researchers.

- A central database of applications has been established and applications are circulated throughout the NIH. Information and assistance is provided by the OE. Interviews are arranged for candidates applying centrally. Candidates requiring no additional assistance may apply directly to the program director.

Training

These new recruitment efforts have been accompanied by changes in the training programs. Prior to 1990, many of intramural clinical training programs were not formally accredited. As the requirements for specialty and subspecialty boards increased, candidates voiced concern over the lack of accreditation of NIH programs. In the last three years the majority of the unaccredited programs have been successfully accredited—bringing to a total of 20 the number of programs formally accredited by the Accreditation Council for Graduate Medical Education or by boards in the respective disciplines. Potential candidates have been informed about the recently accredited programs by direct mail, by advertisement, and by listings in the *Graduate Medical Education Directory* of the American Medical Association.

Candidates have also been informed about the additional opportunities for education which includes the expanded NIGMS workshop in NIH grants, the OE seminar series on Funding and Collaborative Research Opportunities in the Private Sector, the new OE sponsored course in Molecular Biology for Postdoctoral Fellows, FAES evening courses and others.

Improvements in training and recruitment will also accompany increased involvement of fellows in training issues. The Clinical Associate Committee has been replaced by a new committee including postdoctoral fellows. The new Postdoctoral Fellows Committee has launched a seminar series in which scientists and others of prominence address the community of fellows. Dr. Fauci recently spoke about Scientists and the Media. This series is complemented by a new Postdoctoral Fellows Forum sponsored

by the Office of Education in conjunction with the Fellows Committee. The first Forum addressed a number of issues including the new Tenure Track Policies. Such exchanges are designed to ensure that all fellows including women and minorities are equally informed about such policies.

Number of Applicants by Year for the MSF / Clinical Associate-Research Associate Program (Received in Central Office)

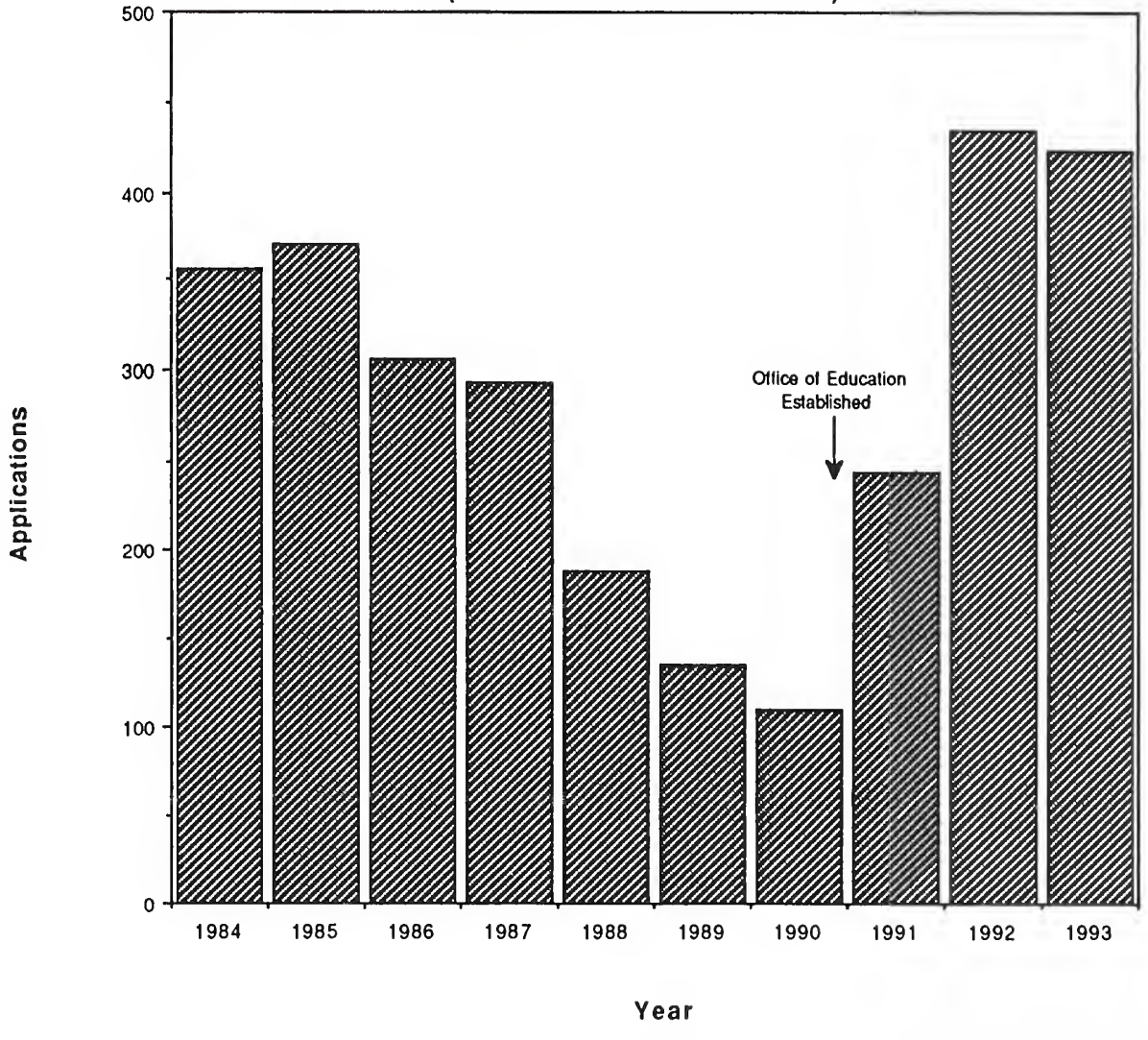

Figure A

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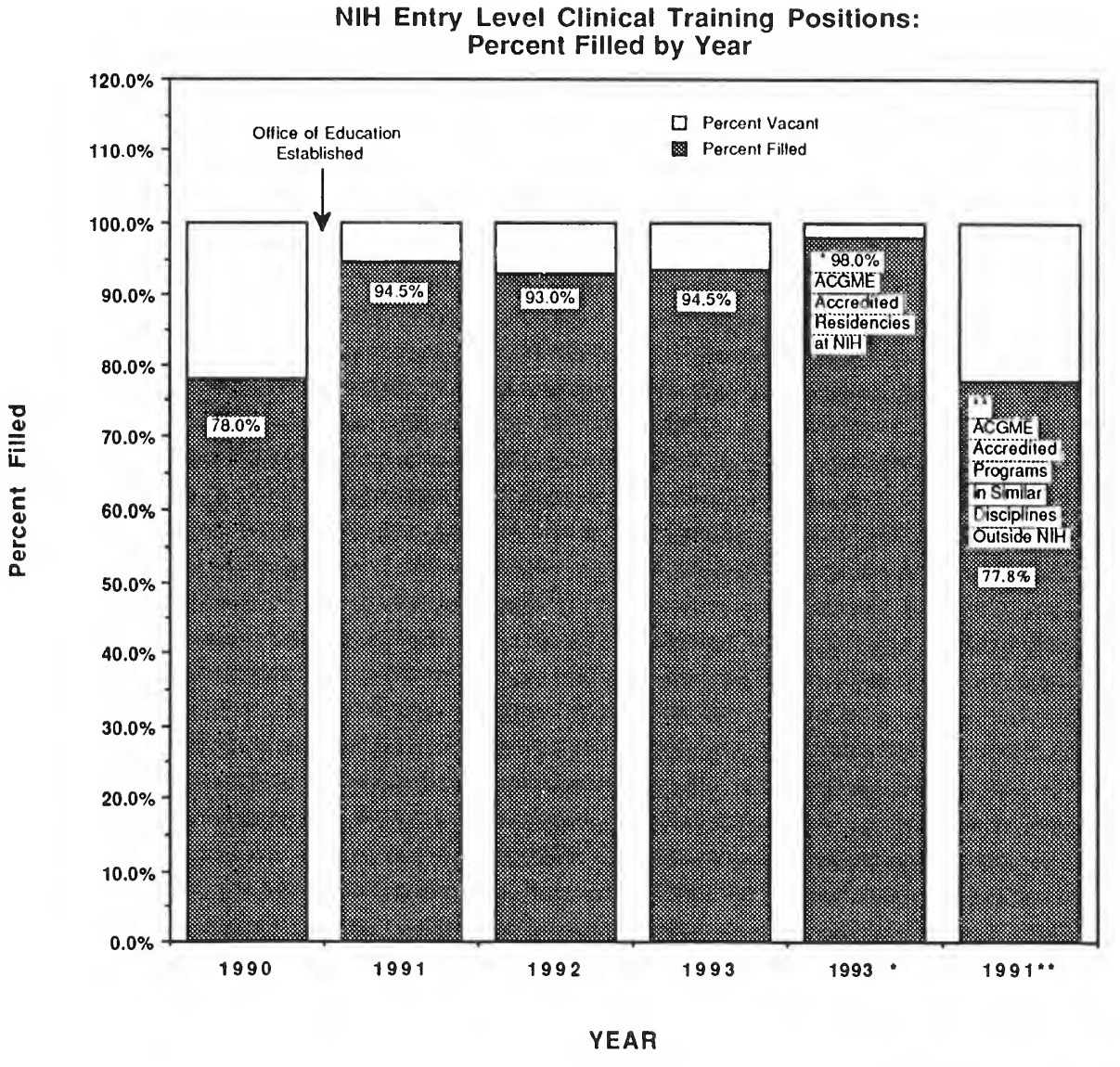

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Figure B

Appendix F

Appendix F

Appointment Mechanisms for Nontenured Scientists

The nontenured scientists in this report held one of the following positions at the NIH:

i. Non-tenured and not encumbering a full-time Equivalent (FTE) position

Positions in this general category are designated for training of postdoctoral scientists, and do not encumber full-time equivalent (FTE) slots.

NCI Biotechnology Training Appointment Program (BTP): This appointment offers an opportunity for physicians and scientists to receive training in fundamental sciences and clinical disciplines to enhance the transfer of biotechnology to clinical cancer programs. Training assignments emphasize the application of newer technology in molecular biology, including recombinant DNA and hybridoma technology, to clinical programs relating to cancer. Clinical disciplines in the areas of nutrition, clinical pharmacology, viral oncology, and biochemical epidemiology will also be emphasized. The intent of the appointment is to provide training 1) to physicians with little or no experience in fundamental research, but with an interest in biotechnology, or 2) to PhD scientists with little or no experience in clinical applications of fundamental research methodology related to biotechnology. Candidates may have no more than 5 years of relevant postdoctoral experience, and remain in this program for up to 5 years.

NCI Cancer Epidemiology and Biostatistics Training Program CEBTP): This program is parallel to the Biotechnology Training Program, but for scientists interested in epidemiology and biostatistics.

NCI Cancer Prevention Training (CPT): This program is parallel to the Biotechnology Training Program, but for scientists interested in prevention.

The NCI General Fellowship Program (GFP): This program is intended to provide clinical and research training for physicians, Ph.D. scientists, and other health professionals in special, high priority areas and in circumstances where other established training programs do not apply.

The NIH Intramural Research Training Award (IRTA): The IRTA was established to enhance the research capabilities of promising postdoctoral scientists in the early postdoctoral stages of their careers. Fellowships may be awarded to candidates with the PhD, MD, DO, DDS, DMD, DVM, or equivalent degrees, or to those certified by a university or a medical school as meeting all requirements leading to such a doctorate. In addition, candidates may not have more than 5 years of relevant postdoctoral research experience, and may remain in this program for up to 5 years.

Visiting Fellowship (VF): This fellowship offers foreign scientists the opportunity to receive further research training or to conduct research in their specialties at the NIH. Each participant works with a senior NIH investigator who serves as a sponsor for the appointment. The visiting fellow

must have a doctoral degree and not more than 5 years of postdoctoral experience when entering NIH training, and may remain in the program for up to 5 years. Resident and nonresident aliens are eligible.

ii. Non-tenured positions encumbering FTEs

These positions encumber full-time equivalent (FTE) slots and their occupants are considered time-limited government employees, not trainees. In general, post-doctoral fellows progress from training positions to non-tenured FTE positions in their progression toward tenure.

a. United States Public Health Service Appointments:

Clinical Associate (CA): This appointment provides the opportunity for physicians and dentists to participate in clinical and laboratory research with primary patient care responsibilities. To be eligible, a fellow must have completed 2 to 3 years of postgraduate medical or dental training. About 125 Clinical Associates are appointed each year. Fellows may be employed by the U.S. Public Health Service as commissioned officers (U.S. citizens only) or as staff fellows in the civil service. Appointments are limited to 7 years, at which time the office must be converted to a tenured position. *After the initial 3 years period as a clinical associate, physicians may be designated as senior clinical investigators (SCI) and as such accept responsibility for pursuing independent research. SCI's are subject to the same time limits of 7 years for obtaining tenure.*

Research Associate (RA): This appointment is used for physicians and dentists who will be trained to conduct laboratory research but who do not have patient care responsibilities. Applicants have less than 3 years of postdoctoral laboratory research at the time of application; however, most applicants have had some research experience. Appointments are as a commissioned officer in the U.S. Public Health Service (U.S. citizens only).

Senior Clinical Investigator: please see Clinical Associate description above. (Note: Senior Clinical Investigators can hold tenured as well as non-tenured positions. Tenured investigators holding a billet as a Senior Clinical Investigator were included in the list of tenured investigators described above.)

b. Civil Service Appointments:

Epidemiology Staff Fellowship: This 3 year program was established to train up to 12 physicians and doctorate-level biomedical scientists a year as professional, research epidemiologists. Applicants are selected by a board representing each participating PHS agency, and are appointed to time-limited, civil service positions. During the first year of that appointment, they will attend accredited Schools of Public Health or equivalent for graduate studies in the field of epidemiology. At the completion of that year, fellows will spend an additional 2 years working directly with their assigned agency preceptors on specific epidemiological research projects. Upon completion of their training at the end of the third year, individual fellows may return to employment in the private or academic sectors, may be recommended for

competitive appointment to Civil Service Positions or as PHS Commissioned Officers by their employing PHS agency, or may be recommended for conversion to other appropriate service fellowship appointments.

Staff Fellowship (SF): This position is used for candidates trained in biomedical laboratory research who have earned a doctoral degree and have significant postdoctoral research experience.

Senior Staff Fellowship (SSF): The Senior Staff Fellowship is an extension of the Staff Fellowship Program and is used for scientists who have doctoral degrees (PhD, MD, DO, DDS, DMD, DVM, etc.) and have completed at least 3 years of laboratory research training.

Visiting Associate Fellowship (VA): This fellowship offers foreign scientists the opportunity to receive further research training or to conduct research in their specialties at the NIH, and parallels the staff fellowship mechanism for U.S. citizens. The visiting associate must have at least 3 years of postdoctoral experience prior to their NIH appointment. Resident and nonresident aliens are eligible.

Visiting Scientist (VS): The visiting scientists position is a higher level than the Visiting Associate Fellowship and is used for trainees who have at least 6 years of postdoctoral experience when entering NIH training.

The cumulative period of appointment in all the above non-tenured Civil Service mechanisms may not exceed 7 years, at which time a candidate must achieve tenure or leave the NIH.